A COMPARATIVE ANALYSIS OF STATE EMERGENCY PLANS:

IMPROVING RESPONSE TO VULNERABLE POPULATIONS

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A COMPARATIVE ANALYSIS OF STATE EMERGENCY PLANS: IMPROVING RESPONSE TO VULNERABLE POPULATIONS

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Dedicated to Mr. and Mrs. Dee & Dorothy Bennett and Mr. Bennie Venable.

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LIST OF ABBREVIATIONS

AA	American Airlines
ADA	American Disabilities Act
ADHS	Alabama Department of Homeland Security
AEMA	Alabama Emergency Management Agency
AEOP	Alabama Emergency Operations Plan
BRFSS	Behavioral Risk Factor Surveillance System
CDC	Centers for Disease Control and Prevention
CIA	Central Intelligence Agency
CIL	Centers for Independent Living
CTIA	The Wireless Association
DoD	Department of Defense
DOJ	Department of Justice
DHHCAN	The Deaf and Hard of Hearing Consumer Advisory Network
DHS	Department of Homeland Security
ECPC	Emergency Communications Preparedness Center
ECS	Emergency Communications System
EOC	Emergency Operations Center
ESF	Emergency Support Function
FBI	Federal Bureau of Investigation
FCC	Federal Communications Commission
FCEOP	Florida Comprehensive Emergency Operations Plan
FDAA	Federal Disaster Assistance Administration
FEMA	Federal Emergency Management Agency

FEMD	Florida Emergency Management Department
GEOP	Georgia Emergency Operations Plan
GETS	Government Emergency Telecommunications Service Program
HUD	Department of Housing and Urban Development
ICS	Incident Command Systems
KyEOP	Kentucky Emergency Operations Plan
MCEMP	Mississippi Comprehensive Emergency Management Plan
MMSA	Micro- and Metropolitan Statistical Area
NECP	National Emergency Communications Plan
NCEOP	North Carolina Comprehensive Emergency Operations Plan
NGO	Non Government Organizations
NIDRR	National Institution Disability and Rehabilitation Research
NIMS	National Incident Management System
NOC	National Operations Center
NRF	National Response Framework
NRP	National Response Plan
NTIA	National Telecommunications and Information Administration
OEC	Office of Emergency Communication
PDA	Personal Digital Assistant
PDF	Portable Document Format
PSHSB	Public Safety & Homeland Security Bureau
PSWAC	Public Safety Wireless Advisory Committee
RECCWG	Regional Emergency Communications Coordination Working Group
RERC	Rehabilitation Engineering Research Center
SCEOP	South Carolina Comprehensive Emergency Operations Plan

SERT	State Emergency Response Team
SILC	Statewide Independent Living Councils
SMS	Short Message Service
TVA	Tennessee Valley Authority
UA	United Airlines
USAI	Urban Area Security Initiative
US&R	Urban Search & Rescue
WMD	Weapons of Mass Destruction

GLOSSARY

Emergency Communications - all communications related to emergencies, dissemination of information, and alerts to the public, hierarchically within agencies, and jurisdictionally across agencies during emergencies.

Emergency Management - the coordination and integration of all activities necessary to build, sustain, and improve the capability to prepare for, protect against, respond to, recover from, or mitigate against threatened or actual natural disasters, acts of terrorism, or other manmade disasters.

Emergency Response - the immediate actions to save lives, protect property, and the environment; and meet basic human needs and also includes the execution of emergency plans and actions to support short-term recovery.

Interoperability - the ability of different agencies to communicate, across jurisdictions and with each other.

Vulnerable Populations - for this research, is defined as individuals with a disability; individuals 65 years or older; and individuals with combination of the two.

SUMMARY

This paper uses the National Response Plan (NRP), the National Response Framework (NRF) and the National Incident Management System (NIMS) to compare the emergency response plans of the Federal Emergency Management Agency's (FEMA) identified Region IV states. The states being compared are Alabama, Georgia, Florida, Kentucky, Mississippi, North Carolina, South Carolina, and Tennessee.

Criticisms made in the *Federal Response to Hurricane Katrina Report* indicated that vulnerable populations are not being appropriately accessed during emergencies. These criticisms contributed to the creation of the Department of Homeland Security (DHS) and the relocation of FEMA (new organizational structure, as well) within the DHS. Even after the policy changes, the latest DHS report card still indicated that improvements were needed in this regard. As of 2007, there were more than 37 million people over the age of 65 and 38.22 million people with disabilities (5 years and older). While there are others, it is important that these vulnerable populations are appropriately included in emergency management plans

In order to assess the inclusion of these vulnerable populations (disabled and aged) in state emergency plans this paper will look at the policy change in the national plans (from NRP to NRF). The analyses in this paper use the current state emergency plans and the previous and current national emergency plans.

Using a content analysis of the current state emergency plans and census information on the vulnerable populations within the area, a correlation is found to indicate the relative importance of planning for response to vulnerable populations. This

analysis is necessary to demonstrate the current impact of the state plans in this regard. The topic analyzed was vulnerable populations. It is to be understood that the more times vulnerable populations appear in text, the more aware (of inclusive) the document is of this population. Demographics of each state were used to show possible correlations for the results of the content analysis.

A comparative analysis of the NRP, NRF and the NIMS is used to show the changes made in the national plans with regard to emergency response and planning. Comparing the three is important because preliminary analysis shows that current state plans utilize one (or a combination of two) of these plans as the basis for their plan. This analysis is important because it reveals the changes made in the national emergency plan that state plans are expected to follow.

Finally, an overall analysis of the state plans is performed to identify the basis of the state plans (NRP, NRF and/or NIMS) and any significant influences within the state (such as number of hazards). This analysis is important to identify differences amongst the states that may not have been revealed by the other two analyses.

This research suggests the current guiding Federal documents are not being followed for state emergency plans. The findings of this analysis can lead to a number of future research endeavors related to how states manage in regards to emergency communications and response to vulnerable populations.

CHAPTER 1

INTRODUCTION

This thesis will use the National Response Framework (NRF)[1], the National Response Plan (NRP)[2], and the National Incident Management System (NIMS)[3] to compare the emergency response plans of the Federal Emergency Management Agency's (FEMA) identified Region IV states.[4] The comparison will determine the relative awareness of the state emergency plans with regards to response[5] to vulnerable populations during emergencies,[6] using the NRF as a standard. Preparedness has a basic role in emergency management[7] and incident response, which is incorporated in each of

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[1] Federal Emergency Management Agency (FEMA), *National Response Framework* (Washington: March 2008).

[2] Federal Emergency Management Agency (FEMA), *National Response Plan* (Washington: December 2004).

[3] U.S. Department of Homeland Security (DHS), *National Incident Management System* (Washington: December 2008).

[4] FEMA, *2008 Strategic Plan: Fiscal Years 2008 -2013,* (Washington: January 2008), 44 These states include Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina and Tennessee.

[5] The definition of emergency communications is all communications related to emergencies, dissemination of information, and alerts to the public, hierarchically within agencies, and jurisdictionally across agencies during emergencies.
The definition of response is the immediate actions to save lives, protect property and the environment, and meet basic human needs and also includes the execution of emergency plans and actions to support short-term recovery. FEMA, *National Response Framework*, 1.

[6]Definition of Vulnerable Populations for this research is defined as individuals living on their own with a disability; individuals 65 years or older; and individuals with combination of the two.
According to the *2008 Strategic Plan* by FEMA (Washington: January 2008, 49) and "Under the Robert T. Stafford Disaster Relief and Emergency Assistance Act, an emergency means any occasion or instance for which, in the determination of the President, federal assistance is needed to supplement state and local efforts and capabilities to save lives and to protect property and public health and safety, or to lessen or avert the threat of a catastrophe in any part of the United States.

[7] Definition of Emergency management is the coordination and integration of all activities necessary to build, sustain, and improve the capability to prepare for, protect against, respond to, recover from, or mitigate against threatened or actual natural disasters, acts of terrorism, or other manmade disasters. U.S.

the leading national documents.[8] Therefore the overall preparedness of the state emergency plans will also be compared. This research is based upon the assumption that there is a need for emergency management at all levels of government for all residents.

1.1 History of Emergency Management

Emergency management has been a Federal concern since the early 1800s. Initially, the Congressional Act of 1803 was passed to provide financial assistance to a fire, which consumed a New Hampshire town.[9] According to Haddow, Bullock, and Coppola in *Introduction to Emergency Management,* this Act is the first piece of legislation enabling the Federal government to assist during disasters.[10]

By the 1930s, both the Reconstruction Finance Corporation and the Bureau of Public Roads were "given the authority to make loans for repair and construction of certain public facilities"[11] following disasters. In 1933, The Tennessee Valley Authority (TVA) was created (by the TVA Act) primarily to produce hydroelectric power, but also to reduce flooding in the region. In the following year, the Flood Control Act of 1934 granted the US Army Corp of Engineers authority to design and build flood control projects.[12] Later during President Roosevelt's administration, Executive Order 8629 (which discusses the office of production management and the office for emergency

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Department of Homeland Security (DHS), *National Incident Management System* (Washington: December 2008), 5.

[8] U.S. Department of Homeland Security (DHS), *National Incident Management System* (Washington: December 2008), 12.

[9] George Haddow, Jane Bullock, and Damon Coppola, *Introduction to Emergency Management*, 3rd ed., (Butterworth-Heinemann, 2007), 2.

[10] Ibid.

[11] Ibid.

[12] Ibid.

management), officially created the emergency management functions for the Federal government.[13]

The Federal Disaster Assistance Administration (FDAA) was founded in 1973, as part of the Department of Housing and Urban Development (HUD). The following year, the Disaster Relief Act was signed to establish the process of Presidential Disaster Declarations. Finally in 1979, Executive Order 12127 officially established the Federal Emergency Management Agency (FEMA).[14]

The Homeland Security Act of 2002 created the Department of Homeland Security (DHS). This Act relocated FEMA as a department within DHS giving DHS authority over FEMA.[15] The implementation of the Homeland Security Act and subsequent creation of DHS was in response to criticism[16] that "increased Federal interagency cooperation could have prevented the September 11 terrorist attacks."[17] The primary missions of DHS are "to prevent terrorist attacks within the United States; reduce the vulnerability of the United States to terrorism; minimize the damage and assist in the recovery from terrorist attacks that do occur within the United States and; carry out all

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[13] Executive Order no. 8629, *Executive Order 8629 on the Office of Production Management and the Office for Emergency Management*, (1941).
[14] Executive Order no. 12127, *Federal Emergency Management Agency*, (Mar. 31, 1979).
[15] *Homeland Security Act of 2002*. Public Law 107–296. 107th Cong., US Statutes at large 116 (NOV. 25, 2002), 2213.
[16] Haddow, Bullock, and Coppola, *Introduction to Emergency Management*, 14.
[17] On September 11, 2001 there was a coordinated effort to fly and crash commercial passenger American aircrafts. American Airlines (AA) 11 and United Airlines (UA) 175 from Boston; American Airlines 77 from Washington, Dulles; and United 93 from Newark, NJ were involved. Flight AA 11 crashed into the Twin Towers (NYC) North Tower, Flight UA 175 crashed into the Twin Towers (NYC) South Tower, Flight AA 77 crashed into the pentagon and Flight UA 93 crashed in Pennsylvania, 125 miles from Washington DC. None of the crew or passengers aboard these flights survived. Including those at the crash sites an estimated 3,000 people died on September 11, 2001.
Kean, Thomas and Hamilton, Lee, *The 9/11 Commission Report*, (W. W. Norton & Company, 2004); Alfano, Sean "War Casualties Pass 9/11 Death Toll", Associated Press, Washington, September 22, 2006.

functions of entities transferred to the Department, including by acting as a focal point regarding natural and man-made crises and emergency planning."[18]

The Federal Emergency Management Agency (FEMA) handles coordination efforts for large-scale disasters and offers assistance to the states. The Post-Katrina Reform Act[19] was established in 2006 to make FEMA a more distinct entity, create new leadership and implement a new mission.[20] In March 2008, FEMA introduced the National Response Framework (NRF). This framework was designed to guide states and local governments on the development of their emergency plan. The NRF was created as a replacement to the National Response Plan of 2004.[21] The replacement of the NRP followed the evaluation of the aftermath and effects of Hurricane Katrina (see timeline, Figure 1).[22] Hurricane Katrina brought forth concerns with emergency response to vulnerable populations[23] and again to the need for a "unified effort in preparing for and responding to natural and man-made disasters."[24]

In March 2004, DHS introduced the NIMS. The NIMS was established to provide a template to prevent, protect against, respond to, recover from, and mitigate the effects of

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[18] *Homeland Security Act of 2002*. Public Law 107–296. 107th Cong., US Statutes at large 116 (NOV. 25, 2002), 2142.
[19] U.S. Congress. Senate. *Post Katrina Emergency Management Reform Act,* S.3721, 109th Cong., 2nd sess., 2006, July 25, 2006.
[20] House Committee on Homeland Security, *The State of Homeland Security: 2007 Annual Report Card on the Department of Homeland Security*, 110 Cong., 2007, 10.
[21] The NRP was a replacement for the *Guide for All-Hazard Emergency Operations Planning* of 1996.
[22] Hurricane Katrina formed over the Bahamas on August 23, 2005 and struck Louisiana on August 29, 2005. This storm flooded approximately 80% of New Orleans, LA. An estimated 1,500 residents died and 770,000 were displaced.
Greenberger, Michael, *Preparing Vulnerable Populations for Catastrophic Public Health Emergencies* (Maryland: The Horizon Foundation, 2007).
[23] Ibid.
[24] The White House, *The Federal Response to Hurricane Katrina: Lessons Learned*, (Washington: February 23, 2006).

incidents, regardless of cause, size, location, or complexity.[25] Since 2006, the NIMS document has been revised to incorporate best practices and lessons learned from recent incidents.[26] The current, December 2008 version will be used for this research.

As of 2007, according to the *State of Homeland Security Annual Report Card*, the performance of DHS with regards to Emergency Preparedness/FEMA and Emergency Communications was marginal receiving a C- and a C, respectively[27]. The following figure displays a timeline of the history of emergency management in the United States.

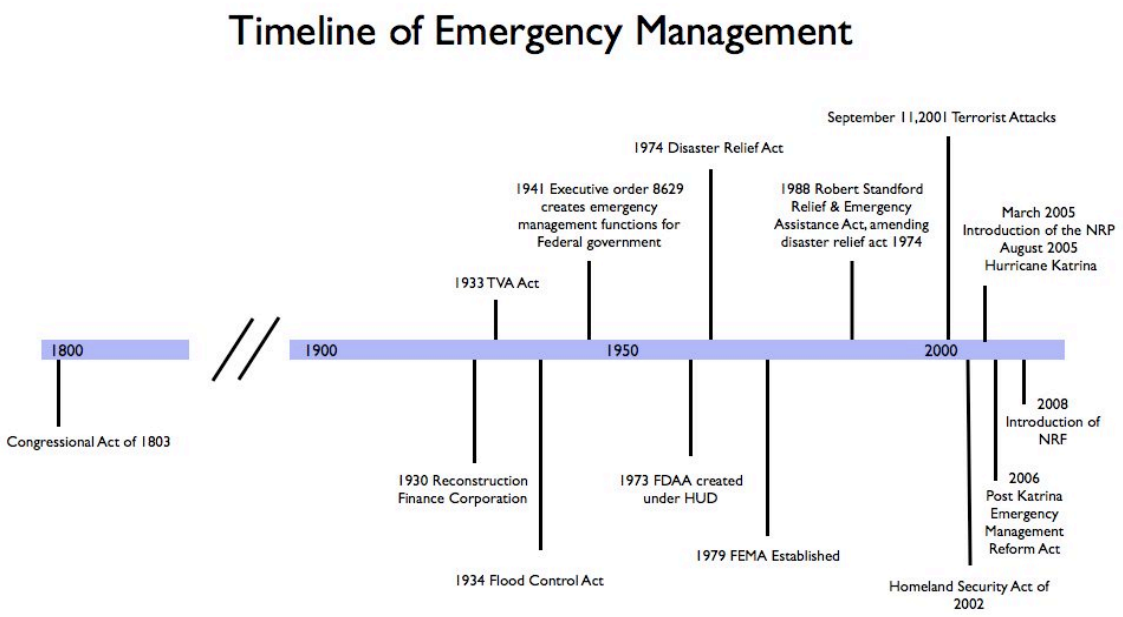

Figure 1: Timeline of the history of emergency management.

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[25] U.S. Department of Homeland Security (DHS), *National Incident Management System,* 1.
[26] Ibid., preface i.
[27] House Committee on Homeland Security, *The State of Homeland Security: 2007 Annual Report Card, 10-15.*

1.2 The National Response Plan

The National Response Plan (NRP) was created on December 2004 (introduced on March 2005) to be the main framework upon which the national government would plan for and respond to emergencies. The NRP was based on the NIMS.[28] The NRP was "designed to support existing White House policy mechanisms and decision making entities during the response to a specific threat or incident. The NRP is also an essential element of the broader policy coordination and reconciliation mechanisms of the Federal Government."[29] The National Response Framework (NRF) replaced this plan in 2008. A summary of this plan can be found in Chapter 4.1 of this paper.

1.3 The National Response Framework

The National Response Framework (NRF) includes a list of necessary roles and duties for emergency management personnel, organizational structure (and hierarchy) of an emergency management office, and the responsibilities of the emergency management office. The NRF guidelines assert that communication systems should aim to be interoperable between Federal, state and city governments; simple to implement (based on cost effectiveness and frequency of use); and provide effortless means to quickly and accurately communicate during a crisis.[30] The assumption it that the NRF will ultimately help the state emergency plans to be interoperable with the government's plan and

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[28] NRP, preface i.
[29] Ibid.
[30] FEMA, *National Response Framework* (Washington: March 2008),30. Chapter II Response Actions: Equip: Local, tribal, State, and Federal jurisdictions need to establish a common understanding of the capabilities of distinct types of response equipment.

neighboring state plans. Interoperability[31] is defined as the "ability of different agencies to communicate across jurisdictions with each other."[32] A summary of the NRF can be found in Chapter 4.1 of this paper.

1.4 The National Incident Management System

The National Incident Management System establishes "the structure, concepts, principles, processes, and language for the effective employment of capabilities nationally, whether those capabilities reside with Federal, state, tribal, or local jurisdictions or with the private sector or non- government organizations."[33] This template "forms the basis for interoperability and compatibility that will, in turn, enable a diverse set of public and private organizations to conduct well-integrated and effective emergency management and incident response operations."[34] The NIMS is not a response plan, a communications plan, or a static system.[35] The NIM and the NRF are designed to improve the incident management capabilities and overall efficiency.[36] A summary of the NIMS can be found in Chapter 4.1 of this paper.

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[31] A plan is interoperable and collaborative if it identifies other plan holders with similar and complementary plans and objectives, and supports regular collaboration focused on integrating with those plans to optimize achievement of individual and collective goals and objectives in an incident, see FEMA, *National Response Framework* (Washington: March 2008), 75.
[32] Mary Taylor, Robert Epper, and Thomas Tolman, *State and Local Law Enforcement Wireless Communications and Interoperability: A Quantitative Analysis*, (Washington: Diane publishing, 1999), preface ix.
[33] U.S. Department of Homeland Security (DHS), *National Incident Management System* (Washington: December 2008), 11.
[34] Ibid., 5.
[35] Ibid., 6.
[36] Ibid., 12.

1.5 Research Focus

The goal of this paper is to assess the inclusion for vulnerable populations in state emergency plans. The focus will be placed on the implementation of the NRF (to replace the NRP) as the leading guideline for emergency planning and management.

Vulnerable populations were chosen as a focus because of criticisms (as mentioned in the *Federal Response to Hurricane Katrina: Lessons Learned*) during the response to Hurricane Katrina. There should have been a better response to vulnerable populations in addition to increased interoperability within the national system and at all levels of government.[37]

The States being compared are within FEMA Region IV. This includes Alabama, Georgia, Florida, Kentucky, Mississippi, North Carolina, South Carolina, and Tennessee. This region was chosen because it is FEMA's largest region with 115 full time employees and 550 reservists available in time of emergency. This region also experiences a range of natural and man-made disasters, states in this region are within close proximity to each other, and the majority of the states have emergency plans readily available. Disasters in this area include natural disasters such as flooding, hurricanes, ice storms, and tornadoes. Additionally, there is a potential for man-made disasters in this area because the world's busiest airport[38] and the Center for Disease Control headquarters are also located in this region.

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[37] The White House, *The Federal Response to Hurricane Katrina: Lessons Learned*, February 23, 2006, 1-3.

[38] "Atlanta Tops World's Busiest Airports as Global Numbers Near 4.8 Billion Passengers," *International Herald Tribune: Europe*, Associated Press, July 29, 2008.

1.6 Thesis Objective

The comparison of the NRP, the NRF and the NIMS against state plans within Region IV will answer the research question: Are current state emergency plans appropriately inclusive of vulnerable populations with regards to planning and response. Appropriateness is measured by the influence of the NRP, NRF and NIMS; the related demographics in the area and the overall comparisons of the state plans. For purposes of this paper, awareness (inclusiveness) is measured by the number of times vulnerable populations are mentioned in state emergency plans gauged based on the NRF as a standard. Vulnerable populations is defined as individuals living on their own with a disability, individuals 65 years or older and individuals with combination of the two.

PART I: EMERGENCY PLANNING OVERVIEW AND LITERATURE REVIEW

Before comparing the FEMA guidelines (NRP, NRF and NIMS) with current state emergency plans, this paper addresses the importance of Federal involvement in emergency management, communications and response. The current missions of the Federal agencies involved in emergency response are highlighted in the next chapter. Additionally, the founding regulations and judicial authorities involved in Federal response are identified. This section also discusses similar reports and studies on emergency planning, emergencies and people with disabilities, and emergency communications.

CHAPTER 2

BACKGROUND

From the Congressional Act of 1803 to the Homeland Security Act of 2002, many changes have been made to how the Federal government is involved in disasters and large-scale emergencies. Since the implementation of the Homeland Security Act of 2002, FEMA began reporting to the Department of Homeland Security (DHS).[39] This chapter summarizes the missions, goals, organizational structure, and background of FEMA, DHS and other emergency management related agencies that influence the content of the National Response Framework (NRF) and National Incident Management System (NIMS).

As mentioned and referenced in the previous chapter, these agencies are critical to understanding emergency management in the United States. After the September 11, 2001 terrorist attacks, the 9/11 Commission was formed and a subsequent report was published to record findings on necessary changes to the Federal emergency management agencies.[40] This report identified steps and procedures that should be in place and could have possibly prevented the attacks. Similarly, following the aftermath of Hurricane Katrina, a bipartisan committee was formed to create a report, "The Federal Response to

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[39] *Homeland Security Act of 2002*. Public Law 107–296. 107th Cong., US Statutes at large 116 (NOV. 25, 2002), 2213.
[40] Kean, Thomas and Hamilton, Lee, *The 9/11 Commission Report*, (W. W. Norton & Company, 2004).

Hurricane Katrina: Lessons Learned."[41] This report identified several ways to avoid several of the failures found within U.S. emergency management.[42] This thesis is based upon knowledge that emergency communications and response to vulnerable populations during major disasters needs to improve. Section two of this chapter summarizes reports and studies related to improving emergency management, implementing better emergency communications and effectively responding to the needs of vulnerable populations.

2.1 Agencies

The Federal Emergency Management Agency (FEMA) is currently the means by which the Federal government manages large-scale disasters nationally.[43] As previously stated, FEMA is directed under the Department of Homeland Security (DHS). DHS has the primary duty of securing the nation from terrorist attacks.[44] FEMA is the department that created and introduced the NRF. DHS established the NIMS. The NRF was designed to guide states and local governments on the development of their emergency plan.[45] The NIMS "forms the basis for interoperability and compatibility that will, in turn, enable a diverse set of public and private organizations to conduct well-integrated

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[41] The White House, *The Federal Response to Hurricane Katrina: Lessons Learned*, (Washington: February 23, 2006).
[42] FEMA Strategic Plan Fiscal Years 2008 – 2013: The Nation's Preeminent Emergency Management and Preparedness Agency, FEMA P-422 / January 2008, 1.
The unprecedented 2005 hurricane season, which included hurricanes Katrina and Rita, demonstrated the need for nationwide changes for all of those involved with emergency management.
[43] FEMA, *Strategic Plan Fiscal Years 2008 – 2013: The Nation's Preeminent Emergency Management and Preparedness Agency*, (Washington: January 2008), preface iii.
[44] Bush, President George W., Department of Homeland Security (Washington: June 2002), 1.
[45] Federal Communications Commission, *Performance and Accountability Report*, 9.

and effective emergency management and incident response operations."[46] This paper assumes that steps to maintain effective emergency communications and rapidly responding to vulnerable populations during disasters are outlined in the NRF and NIMS. The Federal Communications Commission (FCC) also influences emergency communications. The FCC is responsible for ensuring access to the wireless spectrum for public safety agencies. The background, organizational structure, goals and missions of these agencies are discussed in this section.

2.1.1 Department of Homeland Security (DHS)

History

The National Strategy for Homeland Security and the Homeland Security Act of 2002 is to coordinate the nation to secure it from terrorist attacks.[47] This Act was implemented after the September 11th terrorist attacks of 2001.[48] The Homeland Security Act established the Department of Homeland Security.[49]

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[46] Federal Communications Commission, *Performance and Accountability Report,* 5.
[47] Bush, President George W., Department of Homeland Security June 2002, page 1
[48] Haddow, G., Bullock, J., Coppola, D., *Introduction to Emergency Management*, 3rd ed. (Butterworth-Heinemann, 2007), 14.
The Terrorist Attacks of September 11, 2001 was a coordinated effort to fly and crash commercial passenger American aircrafts. American Airlines (AA) 11 and United Airlines (UA) 175 from Boston; American Airlines 77 from Washington, Dulles; and United 93 from Newark, NJ were involved. Flight AA 11 crashed into the Twin Towers (NYC) North Tower, Flight UA 175 crashed into the Twin Towers (NYC) South Tower, Flight AA 77 crashed into the pentagon and Flight UA 93 crashed in Pennsylvania, 125 miles from Washington DC. None of the crew or passengers aboard these flights survived. Including those at the crash sites an estimated 3,000 people died on September 11, 2001.
Kean, Thomas and Hamilton, Lee, *The 9/11 Commission Report*, (W. W. Norton & Company, 2004); Alfano, Sean "War Casualties Pass 9/11 Death Toll", Associated Press, Washington, September 22, 2006.
[49] *Homeland Security Act of 2002*. Public Law 107–296. 107th Cong., US Statutes at large 116 (NOV. 25, 2002), 2213

In March 2004, DHS introduced the NIMS. The NIMS was established to provide a "template to prevent, protect against, respond to, recover from, and mitigate the effects of incidents, regardless of cause, size, location, or complexity."[50] Since 2006, the NIMS document has been revised to include steps for better preparation and to incorporate the lessons learned from recent incidents.[51] The current December 2008 version of the NIMS will be used for this research.

Mission

The mission of the DHS is "to lead the national effort to secure America; to prevent and deter terrorist attacks; to protect against and respond to threats and hazards to the nation and ensure safe and secure borders; welcome lawful immigrants and visitors; and promote the free-flow of commerce."[52] The DHS agency dedicated "to helping first responder's nation-wide"[53] by ensuring that emergency response experts are well "prepared, equipped and trained for any situation" is FEMA.[54] This makes the DHS important for this study, because the directives handed down to FEMA, can affect emergency management plans and missions.

The DHS has five strategic goals, "(1) protect the nation from dangerous people; (2) protect the nation from dangerous goods; (3) protect crucial infrastructure; (4)

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[50] U.S. Department of Homeland Security (DHS), *National Incident Management System,* 1.
[51] Ibid., preface i.
[52] Bush, President George W., Department of Homeland Security (Washington: June 2002), 1
[53] Ibid.
[54] Ibid., 3, 16.

strengthen the nation's preparedness and emergency response capabilities; and (5) strengthen and unify DHS operations and management."[55]

2.1.2 Federal Emergency Management Agency (FEMA)

History

The history of emergency management can be traced to the 19th century, providing financial assistance to a town in New Hampshire, which was consumed with fire.[56] The Congressional Act of 1803 was the first legislative action making Federal resources available to assist state and local governments[57] to handle disasters and emergencies.

Between 1803 and 1906 there were several Federal agencies involved in the handling of disasters and emergencies.[58] By the 1930s both the Reconstruction Finance Corporation and the Bureau of Public Roads were "given the authority to make loans for repair and construction of certain public facilities"[59] following disasters. In 1933, The Tennessee Valley Authority (TVA) was created (by the TVA Act) to produce hydroelectric power, but also to reduce flooding in the region. By 1934, the Flood Control Act of 1934 granted the U.S. Army Corp of Engineers authority to design and

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[55] U.S. Department of Homeland Security, *One Team, One Mission, Securing Our Homeland: The U.S. Department of Homeland Security Strategic Plan Fiscal Years 2008 -2013* September 16, 2008.
[56] Haddow, Bullock, and Coppola, *Introduction to Emergency Management,* 2.
[57] Ibid.
[58] As the nation's infrastructure grew, Congress passed legislation to coordinate these agencies. The Disaster Relief Act of 1974 established the process of presidential disaster declarations. At one point, more than one hundred federal agencies were involved in handling disasters and emergencies. In 1979, working with President Jimmy Carter, Congress consolidated many of them into the new Federal Emergency Management Agency, or "FEMA."
[59] Haddow, Bullock, and Coppola, *Introduction to Emergency Management,* 2.

build flood control projects.[60] Later in 1941, during President Roosevelt's administration, emergency management functions for the Federal government were created.

The Federal Disaster Assistance Administration (FDAA) was founded in 1973 under the Department of Housing and Urban Development (HUD). In 1974 Disaster Relief Act was signed to establish the process of Presidential Disaster Declarations. In 1979, Executive Order 12127 officially established the Federal Emergency Management Agency.[61]

In 1988, the Robert T. Stafford Disaster Relief and Emergency Assistance Act, PL 100-707, was signed into law (November 23), amending the Disaster Relief Act of 1974, PL 93-288. This Act constitutes the statutory authority for most Federal disaster response activities especially as they pertain to FEMA and FEMA programs.

As mentioned previously, the Homeland Security Act of 2002 created the Department of Homeland Security (DHS) and this Act granted DHS authority over FEMA.[62] The Post Katrina Emergency Management Reform Act (2006) created "new leadership positions and requirements; changed the mission; gave new responsibilities; and required the FEMA Administrator to intake a broad range of activities before and after disasters occur."[63] In March 2008, FEMA introduced the National Response Framework (NRF), to help streamline coordination of emergency management. The

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[60] Haddow, Bullock, and Coppola, *Introduction to Emergency Management,* 2.
[61] Ibid., 26.
[62] U.S. Congress. *Homeland Security Act of 2002*. Public Law 107–296. 107th Cong., US Statutes at large 116 (NOV. 25, 2002), 2213.
[63] House Committee on Homeland Security, *The State of Homeland Security: 2007 Annual Report Card, 10.*

NRF was created as a replacement to the National Response Plan (NRP) of 2005.[64] The NRP was replaced following the evaluation of effects of Hurricane Katrina (*The Federal Response to Hurricane Katrina: Lessons Learned*).[65]

Mission

The primary mission of the Federal Emergency Management Agency is "to reduce the loss of life and property and protect the Nation from all hazards, including natural disasters, acts of terrorism, and other man-made disasters, by leading and supporting the Nation in a risk-based, comprehensive emergency management system of preparedness, protection, response, recovery, and mitigation."[66] FEMA provides an emergency management framework, the National Response Framework, which guides the nation in a unified response for preparedness to disasters and emergencies.[67] This framework can be found on their online National Response Framework Resource Center.[68]

Region IV

FEMA divides the United States into ten regions incorporating commonwealths and territories, American Samoa, Guam, Mariana Islands, Marshall Islands, Micronesia, Palau, Puerto Rico, and Virgin Islands. This research focuses on the southeastern states in

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[64] The NRP was a replacement for the *Guide for All-Hazard Emergency Operations Planning* of 1996.
[65] Hurricane Katrina formed over the Bahamas on August 23, 2005 and struck Louisiana on August 29, 2005. This storm flooded approximately 80% of New Orleans, LA. An estimated 1,500 residents died and 770,000 were displaced. Greenberger, *Preparing Vulnerable Populations for Catastrophic Public Health Emergencies*.
[66] FEMA, *Strategic Plan Fiscal Years 2008 – 2013: The Nation's Preeminent Emergency Management and Preparedness Agency*, (Washington: January 2008), preface iii.
[67] FEMA, *National Response Framework* (Washington: March 2008), 30.
[68] FEMA. National Response Framework, http://www.fema.gov.nrf/ (accessed: January 2008).

Region IV (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina and Tennessee). This is FEMA's largest region with 115 full time employees and 550 reservists available in time of emergency.

Region IVs most common challenges are tornados, hurricanes and other storms that can cause flooding. Its main offices are in Atlanta, GA. This region is segmented into 4 departments, (1) Response and Recovery Division, (2) Flood Insurance and Mitigation Division, (3) National Preparedness Division, and (4) the Administration and Resource Planning Division.

FEMA's Region IV works in partnership with the emergency management agencies of these southeastern states to prepare for, respond to and recover from disasters.

2.1.3 Federal Communications Commission (FCC)

History, Mission and Leadership

The Communications Act of 1934 established the Federal Communications Commission (FCC). The FCC was created "to regulate interstate and international communications by radio, television, wire, satellite and cable, for all 50 states and US possessions."[69]

There are five commissioners that lead the FCC, all appointed by the President and confirmed by the Senate. They are confirmed for a period of five years. Besides

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[69] Federal Communications Commission, *Performance and Accountability Report: Fiscal Year 2008* (Washington: November 17, 2008), 3.

having to be confirmed by the Senate, no more than three appointed commissioners can be member to the same political party.[70]

The FCC is segmented into seven bureaus, Public Safety & Homeland Security, Wireline Competition, Enforcement, Wireless Telecommunications, Media, Consumer & Governmental Affairs, and International. The Bureau of Public Safety & Homeland Security is most important for the purposes of this study.

Public Safety & Homeland Security Bureau

The mission of the FCC Bureau of Public Safety & Homeland Security (PSHSB) is to be responsible for all FCC activities affecting "public safety, homeland security, national security, emergency management and preparedness, disaster management, communications infrastructure security and reliability, and other related issues, and for dissemination of communications information to public safety organizations and the general public."[71]

2.1.4 Overview of Federal Agencies

Since the Homeland Security Act of 2002, DHS has been responsible for the directives given to FEMA.[72] This Act gave FEMA a major overhaul including implementing a new mission and leadership positions and responsibilities.[73] In 2006, the

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[70] Federal Communications Commission, *Performance and Accountability Report*, 3.
[71] Ibid., 9.
[72] U.S. Congress. *Homeland Security Act of 2002*. Public Law 107–296. 107th Cong., U.S. Statutes at large 116 (NOV. 25, 2002), 2213
[73] Ibid.

Post Katrina Emergency Management Reform Act implemented a similar overhaul of FEMA adding that the FEMA Administrator take on new duties before and after disasters occur.[74]

FEMA is supposed to lead and support the nation with "a comprehensive system of preparedness, protection, response, recovery, and mitigation."[75] This includes but is not limited to guiding the states in emergency management, utilizing emergency communications and responding to the needs of all citizens during disasters (including vulnerable populations). According to the 2007 Annual Report Card, the DHS received a 'C-' on its performance in (1) Emergency Preparedness/FEMA and a 'C' on its performance in (2) Emergency Communications.[76]

DHS previously had difficulty managing its responsibilities with regards to emergency preparedness. This was because of FEMA's "inability to execute contracts in a timely manner, have contracts in place ready to execute and the failure of the department's senior leadership to coordinate with other Federal agencies."[77] This area received a score of 'C-' due in part to the challenges with regards to "operational planning, fraud, waste and abuse contracts, disaster logistics, evacuation planning, command and control, and mass care for victims."[78]

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[74] U.S. Congress. Senate. *Post Katrina Emergency Management Reform Act,* S.3721, 109th Cong., 2nd sess., 2006, July 25, 2006.
[75] FEMA, *Strategic Plan Fiscal Years 2008 – 2013*, 1.
[76] House Committee on Homeland Security, *The State of Homeland Security: 2007 Annual Report Card, 10-15.*
[77] Ibid., 10.
[78] Ibid., 13.

As mentioned previously, DHS received a 'C' for its performance with regards to emergency communications, this was due in part to the challenges of "needing to establish an office of communications to support, promote, monitor and promulgate operable and interoperable communications capabilities."[79] Also stated was a "national emergency communications strategy, creating solutions to overcome obstacles for achieving interoperability and operability."[80] In Chapter 1.2, interoperability was defined as "ability of different agencies to communicate across jurisdictions with each other."[81] The issue of operability and interoperability has been most important, not only to communications but also to increase the ability of first responders to act quickly to insure public safety.

Steps have been taken by the Public Safety Wireless Advisory Committee (PSWAC) to clear out the 'congested radio spectrum' so that "first responders will have the needed frequencies to communicate without interference."[82] The date for transition was set for February 17, 2009[83]. This date has since been extended for four months.[84] The FCC and the National Telecommunications and Information Administration (NTIA)

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[79] House Committee on Homeland Security, *The State of Homeland Security: 2007 Annual Report Card,* 17-18.
[80] Ibid., *15.*
[81] Mary Taylor, Robert Epper, and Thomas Tolman, *State and Local Law Enforcement Wireless Communications and Interoperability: A Quantitative Analysis*, (Washington: Diane publishing, 1999), preface ix.
[82] U.S. Public Safety Wireless Committee, Final Report of the Public Safety Wireless Committee, presented to FCC and NTIA, September 11, 1996, 1.
[83] Poarch, Derek, "Remarks by the Chief Public Safety and Homeland Security Bureau FCC," speech made at the Association of Public-Safety Communications Officials – International 73rd Annual Conference and Exposition, Maryland, August 6, 2007.
[84] Hart, Kim "Senate Passes Bill to Delay Transition to Digital Television," Washington Post, January 27, 2009, Section D, 01

established the PSWAC to "evaluate the wireless communication needs of the Federal, state, and local public safety agencies until 2010 and recommend solutions."[85]

The mission of the FCC is to regulate interstate and international communications by radio, television, wire, satellite and cable. The PSHSB regulates and monitors the public safety spectrum transition.[86] While the FCC is responsible for management of the public spectrum frequencies, FEMA utilizes these frequencies during emergencies to communicate. There is a need for better collaboration amongst Federal agencies and the lack of more finite collaboration may also be an underpinning for the failures within DHS with regard to emergency preparedness and FEMA and its relationship with the FCC.

2.2 Literature Review

Searching for reports and studies related to this comparative analysis was not difficult. There were many reports to be found on emergency preparedness, emergency communications, and response to vulnerable populations during emergencies. However, there are not many studies that compare the NRF and the NIMS to state plans to determine the inclusion of the NRF and the NIMS as national guidelines.

This section was divided into 4 parts: (1) Federal documents, (2) emergency planning, (3) emergency communications, and (4) response to vulnerable populations during emergencies. While all the reports and studies used and researched for this thesis could not be summarized in detail, these represent a brief overview of past and ongoing

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[85] House Committee on Homeland Security, *The State of Homeland Security: 2007 Annual Report Card, 15*.
[86] Federal Communications Commission, "PSHSB" Public Safety and Homeland Security Bureau, http://www.fcc.gov/pshs/ (accessed December 10, 2008).

research in the same topic areas.

The Federal documents summarized in this section represent the leading concerns that drive this type of research. *The 9/11 Commission Report*, details the events leading up to one of the most catastrophic events in America's history and determines the failures with regards to preparedness, planning and response to this man-made disaster. In the *Federal Response to Hurricane Katrina*, the White House outlines all the shortcomings of the newly reformed FEMA (since the changes that took place after the Homeland Security Act of 2002) on the preparedness, planning, response and recovery during this devastating natural disaster.

In the section on emergency planning, three reports are summarized. Two of these reports are focused on man-made disasters and one on natural disasters. The consensus amongst these studies is similar. There are too many unknowns with planning for a man-made or natural disaster and therefore success cannot be achieved without the proper planning. Common elements appear in two of these reports: need for coordination with-in and amongst agencies and proper dissemination of information to the community. In the *Problems of Preparedness: US Readiness for Domestic Terrorist Attack*, the author asserts that one of the main problems facing the national preparedness program is the need for an effective multi-year, multi-agency plan for domestic preparedness.

The section on emergency communications highlights the National Emergency Communications Plan (NECP) as well as three reports. The NECP, revised in August 2008, was created to develop a viable emergency plan for communications by 2013, with milestones to be reached in 2010 and 2011. The first milestone is to have 90% of all high-risk urban areas designated within the Urban Area Security Initiative (UASI) able to

demonstrate response-level emergency communications within one hour for routine events involving multiple jurisdictions by 2010.

Two of the three reports highlighted problems facing emergency communications with regards to wireless communications and people with disabilities, proposing key policy changes and suggestions. The third highlights emergency communications key problems for all individuals. In summary emergency communications should be easy to comprehend, accessible, interoperable and developed for rapid dissemination. With regards to people with disabilities policy changes must ensue in order to warrant the necessary changes in the accessibility, reliability and interoperability to assure effective emergency communications.

Finally, six reports were highlighted in this section on the response to vulnerable populations. Besides identifying accessible communications technologies for vulnerable populations, the proper training of emergency personnel, people with disabilities, and elderly populations was reiterated in these reports as an important concern. The *Natural Disasters and Older Adults with Disabilities: Implications for Evacuation* case study found that having specific knowledge on the demographics of high-risk would be invaluable for the planning and evacuation efforts of certain high-risk areas. The focus of the "Universal Access to Next Generation Emergency Alerting: Reaching People with Disabilities" paper was wireless and mobile devices. Short Message Service (SMS), video phones and video relay systems have become an integral part of the culture for some people with disabilities. This can be exploited for use in the dissemination of information during emergencies.

This section outlines the common problems with emergency planning, emergency

communications and response to vulnerable populations as found by other research reports and Federal studies. From these documents, preparedness, planning and communications is an issue for emergency management. The dissemination of information, interoperability and accessibility are important concerns for mending the problems with emergency communications. Additionally, implementing the use of wireless mobile device technology in emergency communications may significantly reduce the dilemma of effectively responding to vulnerable populations.

2.2.1 Federal Reports

The 9/11 Commission Report: Final Report of the National Commission on Terrorist Attacks Upon the United States[87] (9/11 Report)

The terrorist attacks of September 11, 2001 were a coordinated effort to fly and crash commercial passenger American aircrafts. None of the crew or passengers aboard the hijacked flights survived.[88] Including those affected at the crash sites, an estimated 3,000 people died on September 11, 2001.[89]

The "9/11 Report" details the specifics of the September 11th terrorist attacks in 2001. Using airplane black boxes, news reports and suspect interrogations, this report recounts the day's events with narration of heroism and horror and provides a detailed historical document. The 9/11 Report also examines policy, management and global strategy to avoid similar man-made attacks in the future. According to this report, there

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[87] Kean and Hamilton, *The 9/11 Commission Report*.
[88] Involved flights were American Airlines (AA) 11 and United Airlines (UA) 175 from Boston; AA 77 from Washington, Dulles; and UA 93 from Newark, NJ were involved. Flight AA 11 crashed into the Twin Towers (NYC) North Tower, Flight UA 175 crashed into the Twin Towers (NYC) South Tower, Flight AA 77 crashed into the pentagon and Flight UA 93 crashed in Pennsylvania, 125 miles from Washington DC.
[89] Alfano, Sean "War Casualties Pass 9/11 Death Toll", WASHINGTON, Associated Press Sept. 22, 2006.

were "a number of missed opportunities to 'thwart' the 9/11 plot; information was not shared, analysis was not pooled and effective operations were not launched amongst responsible agencies."[90]

Historically the attacks of September 11th were more devastating than any other on U.S. soil.[91] Previous attacks were carried out by major government powers, these attacks, however, were enacted by a very small group of people.[92] The U.S. government was unprepared for this type of man-made disaster and were therefore caught completely off guard.

This report is important to this thesis because it narrates one of the most catastrophic man-made events in the U.S. Through revisiting the horrors of September 11, 2001; steps to prevent this type of event were identified in this report. Two of the most important failures (found in hindsight) were the need for more effective emergency communications and for interoperability amongst the coordinating agencies. This disaster lead to the establishment of the Homeland Security Act of 2002. This Act created the DHS and repositioned FEMA as an agency within the new department. Subsequently the NRP was reintroduced after adjustments in March of 2005.

The Federal Response to Hurricane Katrina: Lessons Learned[93]

Hurricane Katrina formed over the Bahamas on August 23, 2005 and struck Louisiana on August 29, 2005. This storm flooded approximately 80 percent of New Orleans, LA. An estimated 1,500 residents died and 770,000 were displaced.[94] While the

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[90] Kean and Hamilton, *The 9/11 Commission Report,* 353.
[91] Ibid., 339.
[92] Ibid.
[93] The White House, *The Federal Response to Hurricane Katrina: Lessons Learned*, February 23, 2006.
[94] Greenberger, *Preparing Vulnerable Populations for Catastrophic Public Health Emergencies*

floods in New Orleans, LA were most infamous and well documented by the media, it is important to note that this disaster was not isolated to one town, city or state,[95] neighboring states Mississippi, Alabama and Florida were affected as well. President George W. Bush spoke from New Orleans Jackson Square to address the nation after Hurricane Katrina. While parts of New Orleans was still flooded, he stated " that four years after the frightening experience of September the 11th, Americans have every right to expect a more effective response in a time of emergency. When the Federal government fails to meet such an obligation, I, as President, am responsible for the problem, and for the solution."[96]

The Lessons Learned Report outlines the events leading up to landfall of hurricane Katrina, steps to transform national preparedness, and identifies lessons learned throughout the event. At the end of the document, a list of recommendations is detailed in the appendix. The lessons learned include the need for: unified management of national response; command and control within the Federal government; knowledge and practice of the plans; and sufficient regional planning and coordination.

There were quite a few challenges identified in this report. Among them were the following, identified in detail within the Lessons Learned report as separate chapter:

- Integrated Use of Military Capabilities
- Communications
    - The storm debilitated 911 call centers, local emergency services, broadcast, and utility poles[97]
- Logistics and Evacuation
- Search and Rescue

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[95] The White House, *The Federal Response to Hurricane Katrina: Lessons Learned,* 2.
[96] Ibid., 1.
[97] Ibid., 55.

- Even though (Urban Search & Rescue) US&R, the Coast Guard, and military responders were on site to help, coordination was complicated because the teams each had very different missions, trained and operated in very different ways.[98] This restricted cohesiveness.

- Public Safety and Security
- Public Health and Medical Support
- Human Services
  - To provide a safety net for vulnerable populations.[99] Individuals with special needs suffered terribly in this disaster[100].
- Mass Care and Housing
- Public Communications
- Impact Assessment
- Hazards, Debris Removal
- Managing Foreign Aid
- Non –governmental Aid

The Lessons Learned report is important to this thesis because it identified the challenges faced in a large-scale natural disaster. Among the challenges were responding to the needs of more vulnerable populations and emergency communications. This natural disaster occurred less than 4 years after the terrorist attacks of September 11, 2001 and within 3 years of the reorganization of FEMA. This disaster lead to the creation of the Post-Katrina Emergency Management Reform Act. This Act redefined the mission of FEMA and changed management. Subsequently the NRF was introduced in March 2008.

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[98] The White House, *The Federal Response to Hurricane Katrina: Lessons Learned,* 57.
[99] Ibid., 59.
[100] Ibid., 34.

2.2.2 Reports and Studies Related to Emergency Planning

Preparedness for Emergency Response: Guidelines for the Emergency Planning Process[101]

In the article "Preparedness for Emergency Response: Guidelines for the Emergency Planning Process," authors Ronald Perry and Michael Lindell review concepts on emergency preparedness including necessary training, exercises, and emergency plans. They attempt to clarify the relationships among (what they identify as) the three critical components of community emergency preparedness – planning, training and written plans. In this report, they created ten planning process guidelines for natural and technological disasters that can be applied for any environmental threat.[102]

First, they identified two problems for the US to prepare for terrorists attacks, (1) the emphasis of a plan as a document and not on the planning process, and (2) a general lack of awareness of the literature on planning for natural and technological disasters on part of the policy actors, elected officials and law enforcement.[103]

Then they acknowledged guidelines for emergency planning as the following: "(1) planning should be based on accurate knowledge and of likely responses, (2) it should encourage appropriate actions from emergency managers, (3) accept that all disasters create changing environments and it is impossible to cover every contingency for future disasters, (4) emergency planning should address inter-organizational

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[101] Perry, Ronald and Lindell, M., "Preparedness for Emergency Response: Guidelines for the Emergency Planning Process," *Disasters* 27, no. 4 (2003), 336-350.
[102] Ibid., 340.
[103] Ibid., 336.

coordination, (5) it should integrate plans for each individual community hazard managed into a comprehensive approach for multi-hazard management, (6) plans should have a training component, (7) plans should provide for testing proposed response operations, (8) change should be incorporated into every aspect of the emergency management systems, (9) plans are almost always conducted in the face of conflict and resistance, and (10) the plan should recognize that planning and management are different functions and that the true test of the plan rests within its implementations during an emergency."[104]

In this article they concluded that if the "lessons from previous natural and technological threats go unheeded or if decision-makers are uninformed regarding those lessons, great complications may arise."[105] Without proper planning, there could be dangerous outcomes during emergencies.

This report highlights the need for better emergency planning which could prevent the severe issues faced during an emergency. It highlights proper coordination amongst agencies and cites that one of the most important components of preparedness is to have a proper plan.

Collaborative Emergency Management: Better Community Organising [sic], Better Public Preparedness and Response[106]

Naim Kapucu wrote a paper on how the effectiveness of the planning and procedures during emergencies affects future public preparedness[107]. This study finds that

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[104] Perry, Ronald and Lindell, M., "Preparedness for Emergency Response: Guidelines for the Emergency Planning Process," 340-347.
[105] Ibid., 385.
[106] Kacupu, Naim, "Collaborative Emergency Management: Better Community Organising, Better Public Preparedness and Response," *Disasters* 32, no. 2 (June 2008), 239-262.

open communication between elected officials and emergency managers has a significant impact on the public response. Additionally, the use of technology was very important as well. The study, based in Florida, describes how managers faced complacency in their citizens during four hurricanes in six weeks. This study can help in properly preparing for mass evacuations and how to account for all populations. Useful strategies for preparing for hurricanes are identified in this study and can be applicable to other natural and man-made disasters.

Using the disaster framework set forth by the leading Federal documents along with complex adaptive systems theory[108], Sense-making theory[109], and organizational learning theory[110], the author examines community response and coordination in a continuously evolving disaster environment. First this paper lists four reasons that it is important for community coordination in order to prevent citizens from being content with residing in the midst of a large-scale disasters (i.e. people who refuse to evacuate): "(1) lack of information to community; (2) conflicting or inconsistent information can cause apathy or public disregard; (3) underestimation of future events due to repeated

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[107] Kacupu, Naim, "Collaborative Emergency Management: Better Community Organising, Better Public Preparedness and Response," 239.
[108] Kacupu, Naim, "Collaborative Emergency Management," 245, with primary sources Cleveland, H., Nobody In Charge: Essays on the Future of leadership, 2002 and Comfort, L. Shared Risk: Complex Systems in Seismic Response, 1999.
[109] Kacupu, Naim, "Collaborative Emergency Management," 245, with primary sources Weick, K.E., Sensemaking in Organizations, 1995 and Weick, K.E., The Collapse of Sensemaking in Organizations: The Mann Gulch Disaster 1993.
[110] Kacupu, Naim, "Collaborative Emergency Management," 245, with primary sources Cohen and Sproull, Organizational Learning 1996; Argyris and Schon Organizational Learning: A theory of Action Perspective 1978; and Argyris and Schon, Organizational Learning II: Theory, method and practice.1996.

past warnings; and (4) acts of denial ensue because of perceived inability to implement recommended responses."[111]

Surveys were used in this study. They were sent to emergency managers in all Florida counties (67) with 92 percent of questionnaires were returned. Also reviews of the State Emergency Response Team (SERT) situation reports before, during, and after the hurricanes were used. SERT reports are made daily and weekly to the public. They outline current response efforts being monitored by the state emergency operations center in Florida. In addition, twelve interviews were conducted over the phone (and in person) with emergency managers whose counties were affected by three or more storms during the 2004 season.

This study found that trust and relationships are best to be developed prior to a disaster. Coordination among supporting agencies created strong communities. Technology (specifically the Internet) significantly aided the response efforts. Technology allowed public managers, the media, and external entities to communicate effectively during the disaster.[112]

This study presents reasons why communication is important to preparedness and that it should be developed prior to an actual emergency. Proper coordination (interoperability) was found to be important for elected officials and emergency managers. Additionally use of burgeoning technologies, such as the Internet, aids in more effective emergency response.

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[111] Kacupu, Naim, "Collaborative Emergency Management," 246-247.
[112] Ibid., 256-257.

Problems of Preparedness: U.S. Readiness for Domestic Terrorist Attack[113]

In the article "Problems of Preparedness: US Readiness for Domestic Terrorist Attack," author Richard Falkenrath, addresses two important questions that are related to this thesis: "(1) What practical initiatives does the U.S. domestic preparedness program entail and (2) How do these initiatives relate to other U.S government functions, particularly counterterrorism and disaster management."[114] Other questions he addresses are, "how did the program originate, how is the program organized within the Federal government and why, and what major problems face the United States to prepare itself for Weapons of Mass Destruction (WMD) terrorism at home. "[115]

The author hints at the haphazard origins of the domestic preparedness program and the fact that it was not conceived from any strategic plan. Domestic preparedness is a mixture of counterterrorism and disaster management. In the event of a terrorist attack, Federal agencies such as the Federal Bureau of Investigation (FBI), Department of Defense (DoD), and Central Intelligence Agency (CIA) will have to work together effectively with FEMA and the DHS. He also notes that the fundamental structure of the U.S. emergency management system is a function of the Federal structure of the government. While it is not mandated by the Constitution, the Federal government's role has steadily increased since the 1930s.[116]

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[113] Falkenrath, R., "Problems of Preparedness: U.S. Readiness for Domestic Terrorist Attack," *International Security* 25, no. 4, (Spring 2001), 147- 186.
[114] Ibid., 148.
[115] Ibid.
[116] Ibid., 156-158.

Falkenrath finds three factors to explain the domestic preparedness plan for chemical and biological weapons. “The first is that the nation should believe that the “biggest threat” to the U.S. is WMD. Second, is to understand that there are more common forms of terrorism beyond WMD. Third, he finds that prompt and appropriate operational response is very important in lessening the effects of chemical and biological weapons.”[117]

According to Falkenrath, The six challenges that the U.S. government faces in preparing for a terrorist attack are: “(1) the ability to define reasonable, measurable goals for preparedness; (2) ability to implement improvements in preparedness; (3) the ability to reduce uncertainties of real life response; (4) the ability to address the legal regulations for preparedness; (5) the ability to sustain preparedness over time; and (6) the ability to leverage the preparedness program to fulfill multiple government priorities.”[118]

This paper argued that there are two main causes for many of the problems faced by the national preparedness program. They are that the “domestic preparedness program lies on the ‘seams’ of American government and that the executive branch has not presented any viable multiyear, multi-agency plan for the domestic preparedness program.” [119]

Even though Falkenrath examines exclusively from a homeland security standpoint, he finds similar problems in the preparedness of the U.S. emergency

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[117] Falkenrath, R., “Problems of Preparedness: U.S. Readiness for Domestic Terrorist Attack,” 158-159.
[118] Ibid., 171.
[119] Ibid., 186.

management plans as other articles and reports. This report just provides more of a reason for the necessity of studying the emergency plans.

2.2.3 Reports and Studies related to Emergency Communications

National Emergency Communications Plan[120]

The National Emergency Communications Plan presents a strategy to address emergency communications underperformance. The DHS Office of Emergency Communications developed the National Emergency Communications Plan (NECP) in order to "identify the capabilities needed for first responders; set long and short term goals for interoperability; and guide the coordination of the existing emergency communications program."[121]

Emergency communications specifically is defined in this plan as "the ability of emergency responders to exchange information via data, voice and video as authorized to complete their missions."[122] There are three components to emergency communications. They are "operability (the ability of emergency responders to establish and sustain communications in support of mission operations), interoperability (the ability of emergency responders to communicate among jurisdictions, disciplines, and levels of government, using a variety of frequency bands, as needed and as authorized), and continuity of communications (the ability of emergency response agencies to maintain

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[120] U.S. Department of Homeland Security, *National Emergency Communications Plan,* Washington, DC: U.S. Government Printing Office, July 2008 (revised August 7, 2008)
[121] Ibid., 2.
[122] Ibid.

communications in the event of damage to or destruction of the primary infrastructure)."[123]

This plan finds that the capabilities needed for emergency communications going forward are proper governance, standard operating procedures, technology, training and exercises, and usage.[124] Implementing this plan should be a coordinated effort "from the executive and legislative branches of government; Federal agencies; state, local and tribal government; and the private sector."[125] The assessment of progress toward these goals are made from the Emergency Communications Preparedness Center (ECPC) annual strategy assessment, the Regional Emergency Communications Coordination Working Group (RECCWG) annual report, the Office of Emergency Communications (OEC) Biennial progress report, and the OEC national capability report.[126]

The first goal of this plan is to have "90% of all high-risk urban areas designated within the Urban Area Security Initiative (UASI) able to demonstrate response-level emergency communications within one hour for routine events involving multiple jurisdictions by 2010."[127] There are two other goals in this plan: to have "75% of non-UASI jurisdictions able to demonstrate response-level emergency communications within one hour for routine events involving multiple jurisdictions and agencies by 2011" and to have "75 percent of all jurisdictions able to demonstrate response- level emergency

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[123] U.S. Department of Homeland Security, *National Emergency Communications Plan,2*
[124] Ibid., 8.
[125] Ibid., 39.
[126] Ibid., 40.
[127] Ibid., 7.

communications within three hours, in the event of a significant event as outlined in national planning scenarios, by 2013."[128]

This national plan is relevant for this thesis because it is focused on emergency communications and was developed by DHS. It identifies the need for interoperable communications at all levels of government, thus reinforcing the need for agreement amongst the different corresponding emergency management agencies.

Emergency Communication Challenges in Response to Hurricane Katrina: Lessons from the Centers of Disease Control and Prevention[129]

The article, "Emergency Communication Challenges in Response to Hurricane Katrina: Lessons from the Centers of Disease Control and Prevention (CDC)" describes the strategies and tactics used by health communication specialists and highlights three difficult challenges for CDC communication specialists during Hurricane Katrina.[130]

The strategies used by the Emergency Communication System (ECS) are described in this report as: "(1) rapid dissemination of heath messages; (2) adaptation of health messages for diverse audiences, locations and circumstances; and (3) phasing of key risk messages during the emergency response."[131] The succession of communications challenges found during the hurricane Katrina were presented as a case

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[128] U.S. Department of Homeland Security, *National Emergency Communications Plan,* 7.
[129] Vanderford, Marsha, Nastoff, T., Telfer, J., Bonzo, S., "Emergency Communication Challenges in Response to Hurricane Katrina: Lessons from the Centers for Disease Control and Prevention," *Journal of Applied Communication Research* 35, no. 1, (February 2007), 9-25.
[130] Ibid., 10.
[131] Ibid.

study and tested against an application of chaos theory in this report.[132] The authors aim to answer, "(1) does chaos theory provide insight that can help health communication practitioners in responder agencies to understand their challenges and better prepare for the future, and (2) does the CDC case study shed insight on the usefulness of chaos theory as a heuristic for describing decision-making for crisis communication among responder agencies."[133]

According to this study the challenges during emergency response are the following: "(1) rapid dissemination; (2) developing new channels for communication; (2) disseminating consumer information through partnership; (4) message adaptation for local use; (5) Easy to read messages; (6) effective print materials for low-literate readers; (7) adaptation to increase credibility; (8) adaptation for specific circumstances; (9) message phasing; (10) improving low-tech information delivery; (11) developing a system for faster adaptation; and (12) rethinking phasing of message dissemination."[134]

In the results, the authors found that the characteristics challenging the CDC's ability to disseminate information rapidly were based on previous responses during similar prior emergencies (Hurricane Ivan, Charley, and Jeanne) that were chaotic at the time of conception. They also conclude that the chaos theory does help to explain how the staff experienced and met the challenges during Hurricane Katrina.

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[132] Snellnow, T.L, Seeger, M. W., & Ulmer, R. R., "Chaos Theory, Information Needs, and Natural Disasters." *Journal of Applied Communication Research* 30, (2002), 269 – 292.
[133] Vanderford, Marsha, Nastoff, T., Telfer, J., Bonzo, S., "Emergency Communication Challenges in Response to Hurricane Katrina: Lessons from the Centers for Disease Control and Prevention," *10.*
[134] Ibid., 12 – 20.

This is report is based on a study conducted by the CDC to determine the main challenges found in communications efforts during Hurricane Katrina. Even though this report is solely from a health-related standpoint (mitigation against pandemics, wide-spread diseases, etc.), it is relevant for this thesis. The challenges found give proof to the need for more improved communications.

Access Barriers to Wireless Technologies for People with Disabilities: Issues, Opportunities and Policy Options[135]

This paper focuses on the policy research and policy change with regards to wireless technologies for people with disabilities.[136] Using the Delphi polling method, the Wireless Rehabilitation Engineering Research Center (RERC) created a set of policy options that are posed to stakeholders from the disability community, wireless industry, and policy makers to determine the pros and cons of each. This paper outlines the findings and conclusions of the research.[137]

"The Delphi polling method relies on expert opinion, professional experience, intuition and tacit knowledge in order to forecast the importance of certain issues."[138] The main objectives of a policy Delhi is to propose all possible options to be considered, estimate the impacts (and setback) of any posed option, and examine the acceptability of any posed option.[139]

After a three-round electronic Policy Delphi (e-Delphi), the findings show

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[135] Baker, Paul and Moon, Nathan. 2008. Access Barriers to Wireless Technologies for People with Disabilities: Issues, Opportunities and Policy Options. In *Designing Inclusive Futures,* eds. Patrick Langdon, John Clarkson, and Peter Robinson, 139 -147. London: Springer-Verilog.
[136] Baker and Moon. 2008. 139.
[137] Baker and Moon. 2008. 139.
[138] Ibid., 140.
[139] Ibid., 140-141.

that there was a wide range of policy approaches to rectifying the current barriers to accessible wireless technologies for people with disabilities.[140] The policy options addressed during the study were in the areas of access and awareness, economic, regulatory and technology. Here, we will only expand upon the options regarding the access and awareness and regulatory policies.

Five policy options were posed to the participants related to access and awareness, but during the study respondents were concerned that the policies should have been changed to better reflect the feasibility of certain aspects.[141] The policy options posed were: "(1) to increase the investment in public information campaigns about benefits and use of wireless devices for people with disabilities, (2) to launch campaigns to educate manufacturers of wireless devices about eh economic viability of universally designed products, (3) to train and educate programs for educating retailers about product accessibility features, (4) to develop forums where consumers with disabilities can review wireless products, and (5) to create Consumer Report-styled guides that would provide consumers with information about the usefulness and the features of wireless technologies."[142]

The feasibility of two policy options on regulations proposed: "(1) a regulatory enforcement study to determine whether current legislation and rulemaking has increased access to wireless technologies by persons with disabilities and (2) programs designed to strengthen the relationship between public and private sector

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[140] Baker and Moon. 2008146.
[141] Ibid., 142.
[142] Ibid., 142-143.

research and development of wireless technologies that benefit persons with disabilities."[143] The first policy garnered 86% support from the participants in the study, while the second proposed policy was supported by 90% of the participants.

This study revealed that the participants agreed on the feasibility on the policy options posed with regard to access and awareness. Using the Delphi method also revealed that respondents were generally stronger supporters of policy options that were either voluntary or a collaborative effort and that there was little support for mandates with regard the accessibility of wireless technologies to persons with disabilities.[144]

This study, published in 2008, further proves the relative unawareness of proper policies regarding accessible communications by potential key stakeholders (influenced by policies in this area). Additionally, this report reveals a possible solution for more accessible communications may come from use of different technologies (specifically wireless).

U.S. Wireless Policy and People With Disabilities: A Status Report[145]

In March 2003, the "Accessibility for All" conference was held in Nice, France, to examine the role of standards establishment in improving access to a variety of modern products, services and environments for all – the young, old, and people with disabilities

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[143] Baker and Moon. 2008,142-145.
[144] Ibid., 145.
[145] Mitchell, H., Baker, P., Bakowski, A., "U.S. Wireless Policy and People With Disabilities: A Status Report," Prepared for the European Commission, (Brussels: September 2004).

or special needs.[146] One of the focuses of the session was to improve access to information for people with disabilities. Authors Mitchell, Baker and Bakowski offered this white paper as an "assessment of the role and potential of mobile wireless in the United States to assist persons with disabilities." After assessing many of the Federal agencies that regulate communications, key disability policies and agencies, and wireless rehabilitation engineering research and development policies, this paper establishes the key issues with the state of the mobile wireless technology for person with disabilities. These issues include: "(1) education/awareness, (2) market factors, (3) design factors/feasibility, (4) cost/funding/affordability, (5) Accessibility, (6) reliability, and (7) interoperability/standards."[147]

A number of recommendations were made based on each of these key issues. Of these key factors, the most relevant to this paper are: accessibility, reliability, and interoperability/standards. However, all key issues presented in the paper, "U.S. Wireless Policy and People with Disabilities: A Status Report," are summarized below, including the determined recommendations.

Recommendations for the Key Issues[148]

- Education/ Awareness
    - Politicians should be encouraged include more disability issues on their agendas
    - Business cases for the design of accessible products will need to be created
    - Designers should be educated on the needs of people with different types of disabilities
    - Consumers collectively communicate their needs to the industry

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[146] Mitchell, H., Baker, P., Bakowski, A., "U.S. Wireless Policy and People With Disabilities: A Status Report," Prepared for the European Commission, (Brussels: September 2004), 3.
[147] Mitchell, Baker, Bakowski, "U.S. Wireless Policy and People With Disabilities," 19.
[148] Ibid., 20.

- Market Factors
    - Testing groups should be formed
    - Consumers who both have a disability and have tech training should be utilized
- Design Factors/ Feasibility
    - Marketing professionals need to be made aware of the need and the benefits for people with disability
    - Consumers with disabilities should be encouraged to be proactive in advocating and lobbying for accessible products
    - Businesses should invest in better market research.
- Cost/ Funding/ Affordability
    - WiFi or WiMAX services could be made more affordable by providing a scale of services.
    - WiMAX could be treated as a public utility; this would make the service available to everyone, not just consumers with disabilities, at a lower cost
- Accessibility
    - Emergency services will need to utilize a technology to provide better service without negotiating the ability open to people with disabilities to use the new systems
- Reliability
    - Wireless technology needs to be developed in such a way that it does not interfere with other assistive technologies that people with disabilities need to function in mainstream society
    - Standards are necessary to ensure that all devices are compatible
    - The standard should be further developed to cover all areas where interference could occur, even though they may be viewed critically from an industry perspective
- Interoperability/ Standards
    - A scalable wireless network can be provided, such that if a consumer desires a more reliable service, he or she can pay more to receive it
    - Wireless networks may be unreliable, therefore users should plan to use it according to its capabilities

From the recommendations, this paper found that an overall awareness is necessary in order to create possible solutions for reliably accessing people with disabilities. This white paper, insists that the use of the proper technology could enhance the accessibility of people with disabilities (namely wireless technologies). In this thesis, the awareness of a state plan to emergency communications (for all citizens including people with disabilities) will be examined to find if there is a correlation with the number of mobile

wireless subscribers in the area.

2.2.4 Reports and Studies related to Vulnerable Populations during Emergencies

Emergency Management Research and People With Disabilities:
A Resource Guide[149]

In April 2008 the Department of Education (in cooperation with the National Institute on Disability and Rehabilitation Research (NIDRR), the Research Subcommittee of the Interagency Coordinating Council on Emergency Preparedness and Individuals with Disabilities, and the New Freedom Initiative Subcommittee of the Interagency Committee on Disability Research) provided this listing of research projects and recommendations on emergency management and people with disabilities.[150]

Among those research projects included in this report included: "Access to Emergency Alerts for People with Disabilities, Assessing the Impact of Hurricane Katrina on People with Disabilities,[151] Rehabilitation Engineering Research Center for Wireless Technologies, and Saving Lives: Including People with Disabilities in Emergency Planning."[152]

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[149] U.S. Department of Education, *Emergency Management Research and People With Disabilities: A Resource Guide*, (Washington, D.C.: 2008).
[150] Ibid., 1.
[151] This research project is discussed in detail in this chapter. White, G. W., Fox, M. H., Rooney, C., & Cahill, A. "Assessing the impact of Hurricane Katrina on persons with disabilities," (Lawrence, KS: The University of Kansas, The Research and Training Center on Independent Living, 2007).
[152] U.S. Department of Education, *Emergency Management Research and People With Disabilities,* 3-22. Brooks, Marcia, "Access to Emergency Alerts for People With Disabilities," (Boston: National Center for Accessible Media, October 2004 – September 2008); White, Glen, "Assessing the Impact of Hurricane Katrina on People with Disabilities,"(Kansas: Research and Training Center on Independent Living, University of Kansas, 2007); Mitchell, Helena, "Rehabilitation Engineering Research Center for Wireless

In the project "Access to Emergency Alerts for People with Disabilities," Maria Brooks investigates "a collaborative initiative to enhance the nation's emergency warning systems to better serve people with sensory disabilities."[153] Her work aims at providing recommendations on accessibility extensions to emergency system protocols, technologies and services for wired, wireless, Digital Television (DTV)- and IP-based delivery systems.

Glen White assesses the impact of Hurricane Katrina on persons with disabilities in his report. "The research focused on understanding how persons with disabilities prepared for, reacted to, and recovered from the devastating impact of the storm in portions of the Gulf Coast most affected."[154] "Ineffective pre-disaster planning by Centers for Independent Living (CILs), persons with disabilities and emergency management; poorly developed pre- and post-disaster communication and information sharing within and between these entities; and underdeveloped pre- and post-disaster coordination between these entities," were the findings of his report.[155]

The Rehabilitation Engineering Research Center for Wireless Technologies (RERC) at Georgia Tech was created to "1) promote equitable access to and use of wireless technologies by persons with disabilities; and 2) encourage adoption of Universal Design in future generations of wireless technologies."[156] This research center

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Technologies," (Georgia: Georgia Institute of Technology, 2006-2010); and Frieden, Lex "Saving Lives: Including People with Disabilities in Emergency Planning," (Washington: National Council on Disability, 2004).

[153] U.S. Department of Education, *Emergency Management Research and People With Disabilities,* 3.

[154] Ibid., 5.

[155] Ibid., 6.

[156] Ibid.,14.

works on a number of research projects focused on the carrying out their mission. Some of their research projects include: Advanced Auditory Interfaces for Wireless Technology, Alternative Interfaces for Mobile Wireless Technologies, Development of Wireless Emergency Communications, Ensuring Access to Emergency Assistance, Real-time Location-based Information Services.[157]

In Saving Lives: Including People with Disabilities in Emergency Planning, the disaster experiences of the people with disabilities are described. This report also details the contributions and efforts of community-based organizations; examines the nascent work of the U.S. DHS Directorate of Emergency Preparedness and Response (EP&R), FEMA and discusses the ongoing work of the Federal Communications Commission (FCC).[158]

This report served as a guide to finding background information on policies and related reports on the topic of this thesis.

Assessing the impact of Hurricane Katrina on persons with disabilities[159]

This report seeks to outline "the unique challenges associated with ensuring that the needs and priorities of persons with a wide range of physical and cognitive disabilities are met before, during, and after a disaster.[160]" White, Fox, Rooney, and Cahill use this their

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[157] Rehabilitation Engineering Research Center, "Technology Development," http://www.wirelessrerc.org/technology-development, (accessed March 1, 2009).
[158] U.S. Department of Education, *Emergency Management Research and People With Disabilities,* 16.
[159] White, G. W., Fox, M. H., Rooney, C., & Cahill, A. *Assessing the impact of Hurricane Katrina on persons with disabilities*, (Lawrence, KS: The University of Kansas, The Research and Training Center on Independent Living, 2007).
[160] White, Fox, Rooney, Cahill, *Assessing the impact of Hurricane Katrina on persons with disabilities,* 3.

National Institute on Disability and Rehabilitation Research (NIDRR) funded research as a response to the report by the U.S. House of Representatives Select Bipartisan Committee to Investigate the Preparation for and Response to Hurricane Katrina, *A Failure of Initiative: The Final Report of the Select Bipartisan Committee to Investigate the Preparation for and Response to Hurricane Katrina*, which they say neglects to appropriately address the needs of persons with disabilities during emergencies.[161] This report has six research questions:

- What were the major barriers faced by people with disabilities and staff of Centers for Independent Living (CILs) who work with them in planning for and responding to the disaster?

- What were the major barriers and gaps that CIL personnel experienced in three areas: (a) locating and assisting people with disabilities; (b) meeting their independent living needs;(c) providing for assistive technologies?

- What were the major barriers for staff of local emergency management agencies in identifying and locating people with disabilities before and during the disaster?

- What were the major barriers and gaps that emergency personnel faced in evacuating people with disabilities?

- What were the major barriers and gaps faced by emergency management personnel in providing services to people with disabilities during and after the disaster?

- What types of resources, including planning, training, information, equipment, and facilities did people with disabilities, staff of CILs, and local emergency management personnel identify as being potentially most useful to them in the event of future large-scale emergencies?

Focusing on the CILs in the parts of Alabama, Mississippi and Louisiana affected by Hurricane Katrina, this research was carried out by a series of interviews and focus

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[161] White, Fox, Rooney, Cahill, *Assessing the impact of Hurricane Katrina on persons with disabilities,* 6.

groups.[162] The findings in this report showed that "even though the emergency shelters and designated transportation providers were populated throughout the area, the infrastructure that supports the communities was not significantly coordinated to maximize evacuation of residents with disabilities".[163] Additionally, the household items lost to these individuals significantly impacted their independence and welfare.[164] These items included medical supplies, specialized vehicles and accessible shelter. Furthermore the CILs in this area were unable to provide the support needed because the storm damaged their equipment and facilities.[165]

There were nine recommendations that came from this report. Each of them are listed verbatim below[166]:

1. "Develop an initiative that places Statewide Independent Living Councils (SILCs) in a leadership role in a process of bringing together disability organizations including CILs, as well as state and local emergency planners, to develop mechanisms to increase information sharing, coordination, and the development of disaster preparation and emergency response plans that incorporate people with disabilities."

2. "Disability organizations including CILs and SILCs should initiate campaigns toward local and state emergency managers to separate the needs of people with disabilities from other vulnerable populations."

3. "Staff and consumers of CILs should implement systematic training and education that will result in increased numbers of people with disabilities who have developed personal disaster plans."

4. "An education and training curriculum should be developed around effective organizational disaster response and recovery plans for CILs across the country.

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[162] White, Fox, Rooney, Cahill, *Assessing the impact of Hurricane Katrina on persons with disabilities,* 10-11.
[163] Ibid., 11-12.
[164] Ibid.
[165] Ibid.
[166] Ibid., 28-39.

This should include content-specific elements of an organizational disaster plan, materials that can be used by the leadership and staff of CILs and ongoing technical assistance to CILs for developing and implementing these plans."

5. "Evidence-based research findings that are user-friendly must be made available to assist CILs, other community-based organizations and interested people with disabilities to help them understand how existing emergency planning and response systems from around the country operate."

6. "Encourage state emergency management officials to designate one or more disability contacts at the city and county level as primary contacts for inclusion in Emergency Operations Centers when they are activated."

7. "Community-wide efforts need to be put in place that identify persons with disabilities in need of additional services in a disaster, and systems need to be developed to link these persons to services required to either evacuate or secure existing shelter."

8. "Community-wide efforts need to be put in place that can identify functional supports, including accessible transportation, durable medical equipment, alternative communication systems (screen readers, sign language interpreters, etc.) and accessible shelters for persons in a disaster. Systems need to be developed to link these persons to services required to either evacuate or secure shelter."

9. "Investments need to be made at the community level to provide back-up community supports for persons with disabilities in disaster affected areas whose abilities to function independently are dependent upon maintaining access to social and medical services."

This report just details the challenges of people with disabilities during a disaster. It outlines the obstacles they have to overcome and some key steps that can be made to effectively respond to the needs of disabled residents. The report also points out that the *Failure of Initiative: The Final Report of the Select Bipartisan Committee to Investigate the Preparation for and Response to Hurricane Katrina* fails to address these needs or the concerns of disabled residents during an emergency.

Emergency Preparedness and Emergency Communication Access[167]

The purpose of this report is to provide a list of recommendations to increase reliable communications.[168] The Deaf and Hard of Hearing Consumer Advocacy Network (DHHCAN) produced this report in response to the emergency management during the response and recovery efforts during the September 11, 2001 attacks. The emergency communications and alert systems used were unable to effectively warn the individuals of whom are deaf, hard of hearing, late-deafened and deaf-blind.[169]

This report provides recommendations on the current emergency communications network (television; text devices -pagers, Personal Digital Assistants (PDA), cell phones, text radio, displays; and telecommunications and telecommunications relay network) and building a national network. The recommendations were to require widespread consumer collaboration with government agencies, legislators, broadcasters, manufacturers, program and service providers, product developers, telecommunications and Internet providers, public safety officials, and many other entities. Additionally, this report recommends building a national network that will encourage participation and collaboration and provide the tools to help ensure its success.

This report is important to this thesis because it provides reasons behind the push to integrate the use of mobile wireless in the dissemination of information and in responding

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[167] Northern Virginia Resource Center for Deaf and Hard of Hearing Persons *Emergency Preparedness and Emergency Communication Access: Lessons Learned Since 9/11 and Recommendations*, (Virginia: December 2004).
[168] Ibid., 4.
[169] Ibid.

to people with disabilities during emergencies.

Natural Disasters and Older Adults with Disabilities: Implications for Evacuation[170]

In the case study of the New Orleans-Metairie-Kenner, LA after Hurricane Katrina, Lisa McGuire, et. al., analyzed data from the 2003 and 2004 Behavioral Risk Factor Surveillance System to determine the implications for evacuation of older adults with disabilities during natural disasters. The findings were that areas in which there are high populations of older adults with disabilities or those that need assistance walking, moving, etc. having baseline data will assist emergency management planners in preparing for potential evacuations and shelters. Many of the older adults needing assistance in the New Orleans-Metairie-Kenner, LA area may have required assistance with evacuation before Hurricane Katrina; they were left to fend for themselves[171].

They also concluded that using the Behavioral Risk Factor Surveillance System (BRFSS) can aid Federal, state and local community planners and emergency medical persons understand what services may be necessary for older adults with disabilities. The BRFSS is the world's largest on-going telephone health survey system, tracking health conditions and risk behaviors in the United States yearly since 1984[172]. Data is collected

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[170] McGuire, Lisa, Ford, E., Okoro, C., "Natural Disasters and Older Adults with Disabilities: Implications for Evacuation," *Disasters* 31, no. 1, (2007), 49-56.
[171] Ibid., 49-56.
[172] Behavioral Risk Factor Surveillance System website http://www.cdc.gov/brfss/, retrieved, June 10, 2008. Established in 1984 by the Centers for Disease Control and Prevention (CDC), the Behavioral Risk Factor Surveillance System (BRFSS) is a state-based system of health surveys that collects information on health risk behaviors, preventive health practices, and health care access primarily related to chronic disease and injury. For many states, the BRFSS is the only available source of timely, accurate data on health-related behaviors.

monthly from each of the 50 states, the District of Columbia, Puerto Rico, the U.S. Virgin Islands, and Guam.

Using 529 respondents (aged 65 or older) from the New Orleans-Metairie-Kenner, LA Micro- and Metropolitan Statistical Area (MMSA), Lisa McGuire et al, found 31.6 percent of the people in the area had a disability. Of the adults older than 65 in the area, 16.6 percent indicated that they had a disability that required the use of a cane, wheelchair, special bed or a special phone. Having this information readily available prior to the hurricane would have been invaluable to the planning and evacuation of the MMSAs affected.

This study was based on the telephone surveys of the BRFSS and the results found do not fit for individuals over 65 years old who do not have telephone, use mobile telephones exclusively, are institutionalized and/or have difficulty speaking, hearing (enough to answer the questions posed on the phone). However, those over age 65 that are institutionalized (in nursing homes, hospitals, etc.) are not the main focus of the study because in the event of an emergency they are handled along with the rest of the patients according to plans in place for hospitals.

This study was important to this thesis because it outlines the needs of the elderly population in times of emergencies. Often the needs of people with disabilities are similar to those of the elderly.

Universal Access to Next Generation Emergency Alerting: Reaching People with Disabilities[173]

This paper focuses on mobile and wireless solutions for people with disabilities.[174] Based on CTIA statistics in 2006 stating that 60% of the U.S. population uses wireless services, this paper assumes that there will be a increase in the usage of wireless services for emergency communications.[175] "Short Message Service (SMS), video phones and video relay systems have become part of the society and culture of the deaf community. Similarly, SMS has become the new wave of the hard of hearing community."[176]

This paper finds that new wireless technologies will need to be able to provide emergency communications and services that are accessible to all.[177] The increased use of wireless devices by people with all abilities signifies the importance of emergency communications devices that are accessible to all users.[178] The author specifies that the mobile wireless devices should aim to be able to disseminate information in a timely manner during emergencies provided by the mobile and wireless manufacturers and the communications industry.[179]

Author Helena Mitchell, finds that many of the mobile wireless features are part of

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[173] Mitchell, H. *Universal Access to Next Generation Emergency Alerting: Reaching People with Disabilities,* Proceedings of the 4th Cambridge Workshop on Universal Access and Assistive Technology, Cambridge, UK: April 14-16, 2008 79-83.
[174] Mitchell, H. *Universal Access to Next Generation Emergency Alerting: Reaching People with Disabilities,* 79.
[175] Ibid., 80.
[176] Ibid.
[177] Ibid., 82.
[178] Ibid., 80.
[179] Ibid.

the culture for people with certain types of disabilities. Incorporating the use of mobile wireless dissemination of information could significantly enhance the effectiveness of emergency communications for people with disabilities and possibly for all residents. Mobile wireless technology is increasingly being widely used by everyone.

PART II: APPROACH AND DATA COLLECTION

The NRF and Emergency state plans are essential to this analysis. The NRF represents the guidelines on how the nation will plan and prepare for disasters and is a framework upon which state governments may structure their emergency plans. Chapter 3 will discuss the research approach for this analysis, while Chapter 4 will introduce the data used. Chapter 4 discusses the NRF, previous NRP, and state plans in detail, highlighting the guidelines in respect to responding to vulnerable populations, emergency communications and necessities for effective emergency planning.

CHAPTER 3

RESEARCH APPROACH

FEMA created the National Response Plan (NRP) in December of 2004. This plan was designed to be the leading document for planning for and responding to emergencies. It was initially based on the National Incident Management System (NIMS) (also introduced in 2004). The NRP was also developed to support the White House policy for decision making in times of emergency.

The National Response Framework (NRF) was introduced in March of 2008 to replace the NRP. The Federal government created the NRF to be a set of guidelines for states to follow while creating their emergency response plan. This framework was built to work in conjunction with the NIMS.

In December 2008, the NIMS was revised as a template for managing incidents. All states are encouraged to use the NRF and NIMS as reference for preparing emergency plans. However, only states within Region IV are examined in this thesis. Within Region IV many of the current state plans still utilize the NRP. Therefore the NRP, NRF and the NIMS are compared in this analysis to answer the research question: How inclusive are state emergency plans with regards to planning for and responding to vulnerable populations?

First, a comparison of the state plans to the NRP, NRF and the NIMS will be performed. This comparison will focus on the guideline upon which the state plans were based, the date of preparation, whether or not roles and responsibilities are identified, whether operational actions or response actions are identified, and whether or not a letter

of agreement was included in the plan. The letters represent prior agreements that the state emergency agencies have made with other emergency planning organizations within the state.

From the literature review, coordination within and among emergencies agencies is very important to the planning and preparedness process of emergency management. Therefore an overall comparison of the state plans is performed. In this comparison the roles and responsibilities, operational and response actions, and a letter of agreement are investigated. It is assumed that an emergency plan may be adjusted based upon hazards that are most frequent to the state; therefore the types of hazards identified in the state plan are explored. The state plan preparation date is important because of the introduction dates for the NRF, NRP and the NIMS.

Then a content analysis will be used as a tool to compare the state plans with the NRP, NRF and the NIMS separately to identify the level of awareness each state plan has with respect to emergency communications and vulnerable populations. This form of analysis is a multipurpose research method developed specifically for investigating any problem in which the content of communication serves as the basis of inference.[180] It is often used in the research analysis of newspapers and communications projects. This makes content analysis an appropriate tool for examining the guidelines, frameworks and plans used in this research.

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[180] Holsti, Ole, *Content Analysis for the Social Sciences and Humanities* (Massachusetts: Addison-Wesley Publishing Company, 1969), 2.

After performing a content analysis, the states demographics is presented to find possible correlations between over 65 and disabled populations and awareness of responding to vulnerable populations.

3.1 Data

The NRP and NRF were initially created to provide a set of guidelines to provide unified planning for national disasters.[181] Both will be compared to that of each state plan in Region IV. The same will be done with the NIMS. Even though the NIMS was not created to be a response plan, it is a template that provides the basis for interoperability and compatibility for emergency management and incident response operations. The state plans studied in this paper, use the NRP or NRF as a guideline and build upon the basis of the NIMS.

The documents used in this study represent part of the data used for this analysis. They include the NRP (March 2004) and the NRF (March 2008) both set forth by FEMA, the December 2008 revision of the NIMS as created by DHS, the most current state emergency plans created by the states in Region IV, and the 2006 Census data on vulnerable populations (specifically people with disabilities and the aged population).

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[181] The National Response Framework presents the guiding principles that enable all response partners to prepare for and provide a unified national response to disasters and emergencies – from the smallest incident to the largest catastrophe. The Framework establishes a comprehensive, national, all-hazards approach to domestic incident response. See, FEMA, *National Response Framework*, (March 2008), 30.

3.2 Methodology

Content analysis was chosen as the method of comparison because it is objective, systematic, and reproducible.[182] This research examines whether the concerns for better response to vulnerable populations (mentioned as concerns in the *Federal Response to Hurricane Katrina: Lessons Learned* report) has translated into awareness on state plans in this respect.

To fully understand the methodology used in this report, a few definitions are necessary. According to the *2008 Strategic Plan* by and the "Robert T. Stafford Disaster Relief and Emergency Assistance Act," an emergency is any occasion or instance for which (by determination of the President) Federal assistance is needed to supplement state and local efforts and capabilities to save lives and to protect property and public health and safety, or to lessen or avert the threat of a catastrophe in any part of the United States.[183] Vulnerable populations are defined in this study as individuals living on their own with a disability, individuals 65 years or older and individuals with combination of the two.

Only the words and phrases related to vulnerable populations within the NRP, NRF, NIMS and state plans were reviewed in this research. Any context in which these words and phrases were used is useful for the purposes of this study because using them within these specific documents brings awareness to these concerns. The NRP, NRF and NIMS will be used as the standards, separately. For each state plan the frequency in which these

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[182] Holsti, *Content Analysis for the Social Sciences and Humanities*, 3-6.
[183] FEMA, *2008 Strategic Plan* (Washington: January 2008), 49.

words appear will be compared to the corresponding percentage within the NRP, NRF and NIMS for the same words.

Therefore higher percentages (higher than the NRP standard) will indicate a higher sensitivity to the specific issues for that state plan. Conversely, lower percentages will indicate a lower sensitivity to the specific issue compared. The same will be done with NRF and NIMS as a standard.

3.3 Research Steps

3.3.1 Content Analysis

First, the total number of words in the NRP, NRF, NIMS and in each of the state emergency plans was counted. The total number of words was important because each of the documents were of different lengths; therefore the final analysis was based on percentages instead of absolute (raw) numbers. The lengths of these documents are rather long (in excess of 40 pages), for that reason a word counting program was used. All of these plans were in portable document form (PDF). Only states within FEMA Region IV were compared. As of January 2009, the NRP, the NRF and all state plans in Region IV (with the exception of Tennessee) were obtained.

Instead of counting the number of words in each document manually, a software program was used. Within many PDF readers, word count for documents is not readily available. Word Count 2.9[184] was used to count the total number of words in each document. The settings in this program were set to default. All words were counted,

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[184] Word Counter 2.9 by Hanauer, David (October 2008).

hyphenated words were counted as a single word and minor words were included in count.

However, in order to determine the frequency the topic, vulnerable populations, appear in each document a coder was used. Coding is described as the process of recording observations, perceptions and readings of texts.[185] Coders are the individuals who perform these tasks. According to Krippendorff, it is important that the coders receive instructions. These instructions need to be very strict and contain everything needed to replicate the analysis again.[186] Krippendorff recommends that the instructions include; "the qualifications of the coders; the training the coders must undergo in preparations of recording; the syntax and semantics of he data language; and the nature and administrations of the records to be produced."[187]

In this research a coder was used to count the number of times the phrase 'vulnerable populations' appear in the selected documents. Each of these phrases are identified and tallied separately in a table. The coder met the following qualifications; having achieved at least a high school diploma (or equivalent), ability to read at a 12th grade level, ability to count, and the ability to focus for long periods of time. There was not a training course or manual, instead an instruction and reference sheet, with table was provided the coder.[188] This study used only one coder.

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[185] Krippendorff, Klaus, *Content Analysis: An Introduction to its Methodology* 2nd ed. (California: Sage Publications, 2004) 126.
[186] Ibid., 127.
[187] Ibid., 127.
[188] Coder instructions and reference sheet found in the appendix.

The total number of words related to vulnerable populations were divided separately by the total number of words in each document. Each resulting ratio was multiplied by a hundred to create a percentage rate for the frequency each idea appears. An example of this percentage is shown in equation (a).

$$\frac{total\#\ of words related to Vulnerable Populations}{total\#\ of words in document} \times 100 \qquad \text{(a)}$$

These rates were compared against the standard (the rates calculated from the NRF and the rates calculated from the NIMS) in order to determine each state plan's sensitivity to the specific phrase. The percentages in which key words were used with the NRF, NIMS and state plans to identify how much of an effect the concerns for emergency communications and vulnerable populations has had on the creation of the current state plans.

After the numbers from the coder was tallied and percentages created, tables were created to display the results in numerical form. Additionally, graphs were created to compare each of the percentages to one another. These graphs and tables enable easier analysis. An example can be seen in Figure 2.

Next, the tables were analyzed to determine each state plan's sensitivity to each phrase. In the analysis, the NRF was used as a standard of Federal government expectations with regard to emergency management, while the NIMS was used as a standard of expectations for interoperability. The assumption here was that the Federal government would not expect less from state emergency plans (with respect to accessible

emergency communications and response to vulnerable populations) than what the NRF and NIMS present.

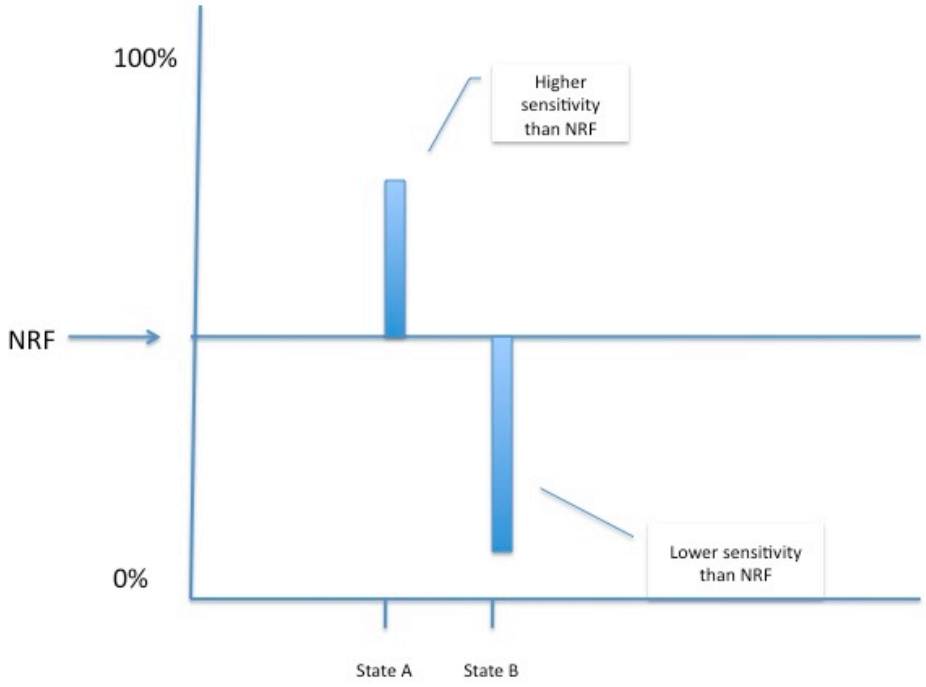

Figure 2: Example for a display of awareness (inclusiveness).

Finally, known census data about each state (with regards to vulnerable populations) was fit to graphs and tables to see if there is a correlation with the state plan's perceived sensitivity. Sensitivity is used to describe how much more or less inclusive state plans are in comparison to the NRF.

A state emergency plan's sensitivity is relative to that of the NRF (and NIMS) and was used as a measure of the state's awareness with regard to vulnerable populations. Further comparison of the state's demographics was used as a test for competing causes for the state emergency plan's perceived awareness.

CHAPTER 4

NATIONAL GUIDELINES & STATE PLANS

As of 2008, there are two major national guidelines most prominent in the shaping of Federal emergency response. These guidelines were created as references for FEMA and state emergency plans. They are the National Response Framework (NRF), and the National Incident Management Systems (NIMS). The NRF and NIMS work hand-in-hand providing the nation with structure and mechanisms for national-level policy and the template for the management of incidents, respectively.[189] Prior to 2008 the NRP was the guideline for Federal emergency response and based upon the NIMS.

The National Response Framework is a replacement for the previous National Response Plan (NRP); it "establishes a comprehensive, national, all-hazards approach to domestic incident response."[190] The NRF "builds upon the National Incident Management System (NIMS), which provides a consistent template for managing incidents."[191] The NIMS establishes "the structure, concepts, principles, processes, and language for the effective employment of capabilities nationally, whether those

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[189] U.S. Department of Homeland Security (DHS), *National Incident Management System* (Washington: December 2008), 1.
[190] Federal Emergency Management Agency (FEMA), *National Response Framework* (Washington: March 2008), 1.
[191] Ibid.

capabilities reside with Federal, State, tribal, or local jurisdictions or with the private sector or non- government organizations."[192]

For the purposes of this study, these documents will be used as the leading guidelines for emergency preparedness and planning. This chapter discusses them in detail, highlighting the guidelines in respect to responding to vulnerable populations, emergency communications and necessities for effective emergency planning.

4.1 National Guidelines

4.1.1 National Response Plan

The National Response Plan (NRP) was created on December 2004 (introduced on March 2005) to be the main framework upon which the National government would plan for and respond to emergencies. The NRP was based on the NIMS.[193] The NRP was "designed to support existing White House policy mechanisms and decision making entities during the response to a specific threat or incident. The NRP is also an essential element of the broader policy coordination and reconciliation mechanisms of the Federal Government."[194]

The NRP contains roles and responsibilities within the State Government, a letter of agreement, and incident management actions. The letter of agreement was signed by 32 agencies indicating that they were in support of the NRP, agreed to the terms and

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[192] U.S. Department of Homeland Security (DHS), *National Incident Management System* (Washington: December 2008), 11.
[193] Federal Emergency Management Agency (FEMA), *National Response Plan* (Washington: December 2004), preface i
[194] Ibid.

conditions, would provide cooperation, resources, and support as appropriate and "Modifying existing incident management and emergency response plans to facilitate compliance with the NRP," among other things. The agencies that signed off represent all areas of government and non-profit agencies from the Department of Agriculture, U.S. Postal Service, and the FCC to the National Transportation Safety Board, National Voluntary Organizations Active in Disaster, and the American Red Cross.

Table 1: List of roles and responsibilities outlined in NRP.

Role	Roles
State Governor	Coordinates state resources, leader in communication to the pubic, requests federal assistance when needed.
Local Chief Executive	Coordinates local resources, leader for communicating to he public within jurisdiction, negotiates agreements with other jurisdictions, requests state assistance when needed.
Tribal Chief Executive Officer	Coordinates tribal resources, can suspend tribal laws when necessary, provides leadership, requests state and Federal assistance, can exchange with the Federal Government directly.

The NRP is very detailed and focused on the organization of each agency involved in coordinating response and mitigation efforts. These agencies include the Homeland Security Council, Policy Coordination Committees, Interagency Incident Management Group, Homeland Security Operations Center, Strategic Information and Operations Center, National Counterterrorism Center, Emergency Support Functions, Region Coordination and the Joint Field Office. Some of these agencies have now been reorganized into bigger organizations.

Activation of incident response is also outlined within the NRP. The Homeland Security Operations Center (HSOC) is the hub by which all information flows. Reports

given to the HSOC are then assessed and reassessed if needed. If the incident is determined to be a non-national threat it is handled totally by the locality in which it originates. However, if the incident is determined to be of a national threat, the DHS will be responsible for coordinating alerts and warnings, and deploying resources.[195]

After a national, man-made threat has been determined, a threat level is assigned. "The threat condition provides a guide to assist government and private-sector entities in initiating a set of standardized actions as a result of increased terrorist threat levels within the United States, and to inform the public on updated homeland security requirements."[196] Threats are assigned one of five colors; red, orange, yellow, blue or green. Blue, green, or yellow threats indicate an overall awareness and monitoring on part of the HSOC. An orange threat indicates a coordination of interagency activity, and recommendations on additional precautions needed to prevent, prepare for, or respond to an attack. Finally a red threat indicates special teams being deployed to respond to an attack.

The plan was maintained by making minor changes, sending out notice of changes and distributing to all participating agencies and state emergency management offices.

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[195] Federal Emergency Management Agency (FEMA), *National Response Plan* (Washington: December 2004), 47.
[196] Ibid., 56.

4.1.2 National Response Framework (NRF)

The National Response Framework was created to be a guide to how the nation conducts emergency response.[197] The NRF is supposed to be adaptable, scalable, and flexible to allow coordination of key roles and responsibilities across the nation.[198] The NRF was built upon the 1996 NRP and became effective March 22, 2008.[199] In this section, the NRF will be used to identify the organization, roles, and equipment that states will need to have in place in order to align with the nation's response plan as indicated by FEMA.

The NRF has listed a response doctrine of five key principles, "engaged partnership, tiered response, scalable operational capabilities, unity through effort of a unified command and readiness to act."[200] Engaged partnership is the idea of sharing goals and aligning capabilities within and across jurisdictions[201] that are essential to catastrophic disasters that cross state boundaries or indirectly effect states outside of the initial incident. Tiered response is the notion that incidents must be managed at the lowest possible jurisdictional level and supported by additional capabilities when needed.[202] Ideally the first responders handle emergencies first with full and clear support from those above. Scalable operational capabilities are mandatory as incidents change in

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[197] Definition of response is the immediate actions to save lives, protect property and the environment, and meet basic human needs and also includes the execution of emergency plans and actions to support short-term recovery. FEMA, *National Response Framework*, 1.
[198] Federal Emergency Management Agency (FEMA), *National Response Framework*,1.
[199] Ibid., 2.
[200] Ibid., 8.
[201] Ibid., 9.
[202] Ibid.,10.

size, scope, and complexity.[203] Unified effort through command requires a clear understanding of the roles and responsibilities of each participating organization.[204] Finally, readiness to act requires preparation. Responders must understand the risk, practice on-site actions that are based on the NIMS, take swift action, and have focused communications.[205]

This framework outlines the roles and responsibilities, the response actions, the response organization and planning for emergency management. The roles and responsibilities are specified for local, state and the Federal government.

Table 2: List of Roles and Responsibilities for state government, as outlined in NRF.

Role	Roles
State Governor	Coordinates state responses, has the power to make, amend and suspend orders associated with response, communicate with public, command state military, coordinate assistance from other states, request Federal assistance, coordinate with impacted tribal governments
State Homeland Security Advisor	Serves as a counsel to the governors office and serves as a liaison to DHS
Director, State Emergency Agency	Ensures that the state is prepared to deal with large-scale emergencies and responsible for coordinating the state response
State Departments and Agencies	Develop, plan, and train internal policies and procedures to meet response and recovery needs safety.
Tribal Leader	Responsible for the public safety and welfare of people of that tribe.

[203] Federal Emergency Management Agency (FEMA), *National Response Framework*, 10.
[204] Ibid.
[205] Federal Emergency Management Agency (FEMA), *National Response Framework*,11; Federal Emergency Management Agency (FEMA), *National Response Framework* (Washington: March 2008), 1.

There are three response actions for emergency management; prepare, respond and recover. Each of these includes a requirement to assure the effectiveness of the action. The following is a list and diagram of how these actions work.

1. Prepare: involves the essential activities of planning, organizing (training and equip), exercises and evaluating (improving).[206] These activities are cyclical in nature.

    a. Planning –"improves effectiveness by clearly defining required capabilities, shortening the time required to gain control of an incident, and facilitating the rapid exchange of information about a situation."[207]
    b. Organizing – the "developing an overall organizational structure, strengthening leadership at each level, and assembling well-qualified teams of paid and volunteer staff for essential response and recovery tasks."[208]
    c. Exercises – "provide opportunities to test plans and improve proficiency in a risk-free environment."[209]
    d. Evaluating – "Upon concluding an exercise, jurisdictions should evaluate performance against relevant capability objectives, identify deficits, and institute corrective action plans."[210]

Response Actions: Prepare Phase

Figure 3. The cycle of the prepare phase for response actions.[211]

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[206] Federal Emergency Management Agency (FEMA), *National Response Framework*, 27.
[207] Ibid., 28.
[208] Ibid., 29.
[209] Ibid., 31.
[210] Ibid., 32.
[211] Adapted from Figure in Federal Emergency Management Agency (FEMA), *National Response Framework*, page 27.

2. Respond: is a four level process.[212] It begins with gaining and maintaining awareness, which moves to achieving and deploying resources and then moves into coordinating responses. At this time it may be prudent to go back to gaining and maintaining awareness. The final level in the process is to demobilize.
    a. Gain and Maintain Awareness - Situational awareness requires continuous monitoring of relevant sources of information regarding actual and developing incidents.[213]
    b. Achieve and Deploy Resources -When an incident or potential incident occurs, responders assess the situation, identify and prioritize requirements, and activate available resources and capabilities.[214]
    c. Coordinating Responses - Coordination of response activities occurs through response structures based on assigned roles, responsibilities, and reporting protocols. [215]
    d. Demobilize – This is the orderly, safe, and efficient return of a resource to its original location and status.[216]

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[212] Federal Emergency Management Agency (FEMA), *National Response Framework,* 32-44.
[213] Ibid., 32.
[214] Ibid., 35.
[215] Ibid., 36.
[216] Ibid., 44.

Response Actions: Respond Phase

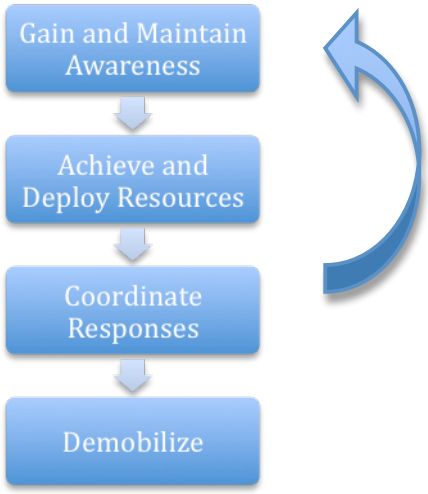

Figure 4: The four levels of the respond phase of the response actions.[217]

3. Recover: there are two types of recovery efforts.[218]
    a. Short-term recovery – is immediate and can overlap with response.
    b. Long-term recovery – may involve months or years. This type of response is outside the scope of the NRF.

There are three levels of response organizations for emergency management; the local, state and national level. At the local level there are a Field-level Incident Command and Field-level Area Command and the Local Emergency Operations Center (EOC). The state and national level only have a State EOC and National Operations Center (NOC), respectively.[219] "The NOC is the primary national hub for situational awareness and

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[217] Adapted from Figure in Federal Emergency Management Agency (FEMA), *National Response Framework,* 32.
[218] Federal Emergency Management Agency (FEMA), *National Response Framework,* 45.
[219] Ibid., 49-55.

operations coordination across the Federal Government for incident management."[220]

Local responders use the Field-level Incident Command to manage response operations. If necessary an Area Command is created to assist the agency administrator in the management of the multiple incidents being handled. "If the Incident Commander determines that additional resources or capabilities are needed, he or she will contact the local EOC and relay requirements to the local emergency manager."[221]

The State EOC is the physical location where multiagency coordination occurs.[222] Every state should have one in case of emergencies that require state-level assistance.

Within the NRF, 15 emergency support functions are identified, including transportation, communications, energy, and long-term community recovery. Communications is identified as Emergency Support Function (ESF #2). ESF #2 is guided by the following policies:

- Communications Act of 1934 (Section 706)
- National Plan for Telecommunications Support in Non-Wartime Emergencies
- The delegation of authority as outlined in NRF[223]
- The Cyber Incident Annex
- The Homeland Security Act of 2002, amended by the Post-Katrina Emergency Management Reform Act

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[220] Ibid., 55.
[221] Federal Emergency Management Agency (FEMA), *National Response Framework,* 50.
[222] Ibid., 51.
[223] As outlined in an Office of Science and Technology Policy memorandum to the manager, National Communications System dated June 11, 1993. Emergency Support Function #2:Communications Annex, page ESF#2-2.

Due to the progress of communications and information technology, the National Communications System (NCS) and the National Cyber Security Division work closely to coordinate with the ESF #2 response to cyber incidents. ESF#2 is activated when a significant impact to the communications infrastructure is expected or has occurred.

The final issue outlined in the NRF is on planning. The national planning architecture for preparedness is segmented into four critical elements. Planning must include a vision, scenarios for possible emergencies, a task list and a capabilities list.

4.1.3 National Incident Management Systems (NIMS)

The National Incident Management System (NIMS) is a template provided by the DHS to assist government, departments and agencies, Non-Government Organizations (NGO), and the private sector work together to protect against, prevent, respond to, recover from and mitigate the effects of any incident.[224] This is regardless of the size or complexity of the incident. The NIMS works in concert with the NRF in order to reduce the loss of life, property or harm.[225]

While the NIMS is not an incident management response plan, "it provides a set of core principles, doctrine and organizational process that will enable effective, efficient and collaborative incident management."[226] Even though the NIMS is relevant for all types of incidents, this paper, is only concerned with the handling of large-scale emergencies.

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[224] U.S. Department of Homeland Security (DHS), *National Incident Management System* (Washington: December 2008), 1.
[225] Ibid.
[226] Ibid., 3.

This template provides the basis for interoperability[227] and compatibility that will enable well-integrated and effective emergency management[228] and incident response operations.[229]

There are five components of the NIMS, "(1) preparedness, (2) communications and organization management, (3) resource management, (4) command and management, and (5) ongoing management and maintenance. These components were created to work together rather than be used separately."[230]

Under preparedness, the NIMS describe specific measures and capabilities that emergency personnel and assets required to implement a unified approach. For a unified approach the NIMS should be integrated with the emergency management and incident response structure. The emergency management plan should also assess the capabilities and resources that will be provided before, during or after an incident. The NIMS lists a number of actions that preparedness organizations may have to take. Among them are "establishing and coordinating emergency management plan, integrating and coordinating activities, establishing standards, identify resources, and using a multiagency coordinating system."[231]

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[227] Definition of Interoperability. A plan is interoperable and collaborative if it identifies other plan holders with similar and complementary plans and objectives, and supports regular collaboration focused on integrating with those plans to optimize achievement of individual and collective goals and objectives in an incident, see FEMA, *National Response Framework* (Washington: March 2008), 75.
[228] Definition of Emergency management. Emergency management is the coordination and integration of all activities necessary to build, sustain, and improve the capability to prepare for, protect against, respond to, recover from, or mitigate against threatened or actual natural disasters, acts of terrorism, or other manmade disasters. U.S. Department of Homeland Security (DHS), *National Incident Management System* (Washington: December 2008), 5.
[229] Ibid., 5.
[230] Ibid., 7.
[231] Ibid., 13.

The NIMS states that there is a need for effective communications and information management. It should include an interoperability plan that information on governance, standard operating procedures, training on technology and exercise.[232] This communication should be viable and redundant. The management functions of the EOC "should define organizations functions, resource descriptions and designate incident facilities."[233]

The NIMS "provides a systematic, proactive approach guiding departments and agencies at all levels of government the private sector and nongovernmental organizations to work seamlessly to prepare for, prevent, respond to, recover from and mitigate the effects of incidents regardless of cause, size, location or complexity.[234]"

4.2 FEMA Region IV State Plans

Effective and comprehensive emergency communications inter- and intrastate are extremely important during times of crisis, especially large-scale disasters. In order to insure that states are on one accord, in respect to emergency communications, it is assumed that they will follow very similar (if not the same) emergency management guidelines, equipment and training. This review will assess the current emergency management guidelines including communication plans for Region IV.

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[232] U.S. Department of Homeland Security (DHS), *National Incident Management System,* 24.
[233] Ibid., 46.
[234] As interpreted from FEMA, NIMS, http://www.fema.gov/emergency/nims/index.shtm (accessed August 20, 2008). NIMS was developed so responders from different jurisdictions and disciplines can work together better to respond to natural disasters and emergencies, including acts of terrorism. NIMS benefits include a unified approach to incident management; standard command and management structures; and emphasis on preparedness, mutual aid and resource management.

This region was chosen because it has the threat of many different types of disasters, the states are close in proximity, and the majority of them have their emergency plans readily available. Due to the bordering Atlantic Ocean and Gulf of Mexico, many states in this region are susceptible to hurricanes, and tropical storms floods. Additionally, due to the many bases in the area, the world's busiest airport,[235] and the Center for Disease Control headquarters located in Georgia, this region is also susceptible to pandemics and terrorist threats.

This section is organized so that each state population is presented, identifying key factors to determine difference between each state. These factors include the total population, number of people with disabilities, percentage of residents aged 65 and older, percentage of residents that speak another language at home and the percentage of residents living without telephone service. Additionally in this chapter, each state plan is introduced in brief.

4.2.1 Alabama

The Alabama Emergency Operations Plan (AEOP) used in this study was prepared on April 20, 2006. This state plan, revised in January 2009, is based off of the NRP and the NIMS.[236] This means that the plan will not include the changes made in the national emergency plan as the NRP has been replaced (March 2008) with the NRF. Alabama Emergency Management Agency (AEMA) "researches current doctrine issued

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[235] "Atlanta Tops World's Busiest Airports as Global Numbers Near 4.8 Billion Passengers," *International Herald Tribune: Europe*, Associated Press, July 29, 2008.
[236] Alabama Emergency Management Agency, *Alabama Emergency Operations Plan* (Alabama: April 20, 2006), preface ii.

by the NIMS Integration Center in the maintenance of the EOP as appropriate."[237]

The AEOP includes a signed agreement from all relevant departments and agencies that may be called on to help during emergencies. This plan also outlines the roles and responsibilities of the Federal, state and local governments, listed below.

- Federal – FEMA will coordinate Federal efforts for all disasters, this includes providing plans, training and funding.[238]
- State – Governor is responsible for all response to disasters (directing and controlling). The AEMA is responsible for coordinating states efforts, and can seek Federal aid through the Governor's Office. Alabama Department of Homeland Security (ADHS) is responsible for coordinating efforts against a terrorist attack. Finally all state departments and agencies should have an Emergency Management Coordinator appointed to liaison between the AEMA and the corresponding agency, during emergencies.
- Local – Local organizations coordinate the disaster preparedness, response, recovery and mitigation efforts for local government.

The AEOP provides an analysis of the hazards of the state, known threats of disasters.[239] The AEOP also identifies the response actions for the AEMA during emergencies. These response actions are different from the NIMS. They are notification and assessment, activation, request for assistance, preparedness actions, response actions,

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[237] Alabama Emergency Management Agency, *Alabama Emergency Operations Plan*, 41.
[238] Ibid., 8.
[239] This table can be found in the Appendix A.

recovery actions, mitigation actions, demobilization, and an after action report.[240] Additionally, these actions are not identified as cyclical in nature. A plan for training and exercises is also included in the AEOP.

4.2.2 Florida

The Florida Comprehensive Emergency Operations Plan (FCEOP) used in this study was prepared on February 1, 2004. In this state plan, with minor revisions in January 2009, there is no mention of the NRP or NIMS.

The FCEOP includes a list of memoranda of understanding that it has with 10 departments and agencies within Florida.[241] It also provides a list of responsibilities for the county, special districts, state, and Federal government. These are provided below.

- Federal – responsible for providing assistances to states and U.S. citizens.
- State - responsible for public awareness, emergency management organization, and reviewing the plan to ensure compliance with national plan.
- Special Districts - Acts as the liaisons with counties and other state organizations.
- Counties - Responsible for maintaining the emergency management program, coordinating public information activities during an emergency.

A list of known hazards is provided in this plan, similar to in the AEOP.[242] The FCEOP, however, does not list the emergency response actions it employs during disasters.

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[240] Alabama Emergency Management Agency, *Alabama Emergency Operations Plan*, 36-39.
[241] Florida Emergency Management Agency, *Florida Comprehensive Emergency Operations Plan* (Florida: January, 2009), 69-70.
[242] This list of hazards can be found in the Appendix B.

4.2.3 Georgia

The Georgia Emergency Operations Plan (GEOP) used in this study was last updated in January 2008. This plan supports the NRP and NIMS.[243] It is important to note that the NRF implemented on March 2008, was available for review as early as January 2008.

The GEOP hazard analysis is not in an easily read table form, however, the threats to Georgia are: tropical storms, tornadoes, floods, wildfires, winter storms, droughts, earthquakes, and terrorism.[244] The local, state and Federal responsibilities are listed in the GEOP as well. They are reiterated below.

- Federal – provides supplemental help to states as needed implementing the NIMS and NRP. [245]
- State – by implementing the NIMS, the state handles emergency response, assess needs of the state, and requests help from other jurisdictions.[246]
- Local - responsible for the emergency management program within the corresponding jurisdiction. Create agreements with local departments and agencies that will be of use during emergencies.[247]

The GEOP does not list the emergency response actions it employs during disasters.

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[243] Georgia Emergency Management Agency, *Georgia Emergency Operations Plan* (Georgia: January 2008), preface i.
[244] Georgia Emergency Management Agency, *Georgia Emergency Operations Plan*, 3-5.
[245] Ibid., 9.
[246] Ibid., 8.
[247] Ibid., 7.

4.2.4 Kentucky

The state response, as identified in the Kentucky Emergency Operations Plan (KyEOP) comes solely from the NIMS.[248] The plan is intended to list the responsibilities of the Federal, state and local governments, provide guidance in the event of disaster, and create procedures for determining the magnitude of threats.[249]

The KyEOP has three operational phases: preparedness, recovery and response. Preparedness is defined as normal operations, response is the actual operations, and recovery is when departments and agencies return to normal operations while assessing damage.[250]

The responsibilities of local state and Federal government are defined as the following:

- Federal – provides support to state and local governments.
- State – provides supplemental (an in some occasions substitution) support to local governments when needed.
- Local – provides mass care and coordinate with departments and agencies. The local government may request assistance from the state, if needed.

The KyEOP does not includes a hazard analysis table, however it does list floods, tornadoes, severe weather, earthquakes, wildfires, landslides, subsidence, transportation accidents, energy related hazards, droughts, terrorism, dam failure, animal diseases, and

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[248] Kentucky Emergency Management Agency, *Kentucky Emergency Operations Plan* (Kentucky:)5.
[249] Ibid., 4.
[250] Ibid.,7.

epidemiological outbreaks as identified threats to the state.[251] Severe weather is defined as thunderstorms, hail storms, winter storms, and the remnants of hurricanes. Subsidence is defined as sinkhole and mine related hazards. Energy-related hazards are power shortages (or outages).[252]

4.2.5 Mississippi

On June 1, 2008, the Mississippi Comprehensive Emergency Management Plan (MCEMP) was revised from the previous 2006 version. It is based on the NRF and incorporates the NIMS. The responsibilities of the Federal, state and local levels of government as identified by the MCEMP are listed below:

- Federal - Will dispatch Federal inter-agency personnel and equipment to states during emergencies as needed.
- State – Responsible for monitoring possible threats. Also to receive, evaluate and respond to requests for help during emergencies.
- Local – Is the first line of defense against a disaster. At the local level, government officials are able to proclaim a local emergency and respond appropriately. The local government can also request assistance from state government.[253]

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[251] Kentucky Emergency Management Agency, *Kentucky Emergency Operations Plan*, appendix 1-1.
[252] Ibid.
[253] Mississippi Emergency Management Agency, *Mississippi Comprehensive Emergency Management Plan*, (Mississippi: June 2008), 7.

The MCEMP also provides the activation level of the Mississippi Emergency Management Agency. These levels correspond with the FEMA Emergency Response Coordination Center.

Activation Levels of the MEMA

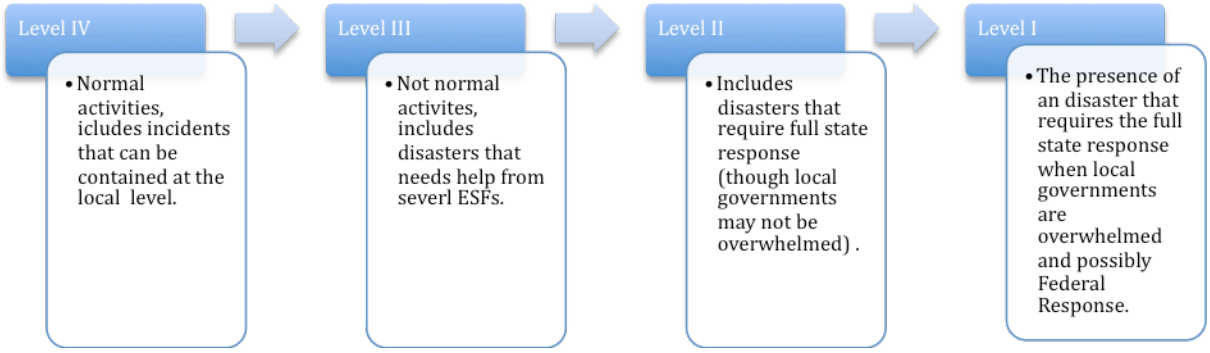

Figure 5: The activation levels of the Mississippi Emergency Management Agency and descriptions.

The MCEMP does include a hazard analysis table; it lists the known hazards as, earthquakes, tornadoes, floods, and hurricane.

4.2.6 North Carolina

The North Carolina Emergency Operations Plan (NCEOP) was last revised in March 2008. The Department of Crime Control & Public Safety, which is a division of Department of Emergency Management, prepared the NCEOP. The NCEOP was created to be compliant with the NIMS.[254]

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[254] North Carolina Emergency Operations Center, *North Carolina Emergency Operations Plan,* (North Carolina: March 2008), 1.

Emergencies prone to this area include, tornadoes, hurricanes, flooding, winter storms, droughts, wildfires, earthquakes, nuclear facility accidents, hazardous materials, nuclear threat, energy-related, mass fatalities, terrorism, animal disease, landslides, and dam failure.[255]

North Carolina also provides the activation levels for its State Emergency Operation Center (EOC).[256]

Activation Levels of the NCEOC

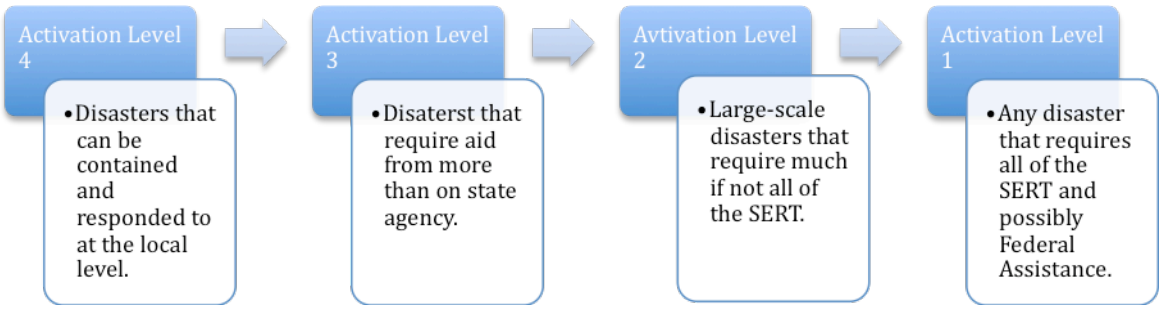

Figure 6: Activation levels of the North Carolina EOC as stated in the NCEOP.

4.2.7 South Carolina

South Carolina last revised the South Carolina Emergency Operations Plan (SCEOP) in March 2008. This plan is based on the NIMS.[257] This plan includes a list of hazards[258], responsibilities per level of government, and activation levels for the South

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[255] North Carolina Emergency Operations Center, *North Carolina Emergency Operations Plan*, 4-6.
[256] Ibid.,
[257] South Carolina Emergency Operations Center, *South Carolina Emergency Operations Plan* (South Carolina: March 2008)
[258] Hazard rating summary located in Appendix C.

Carolina Emergency Operations Center (SCEOC). There is no letter of agreement included in this plan.

The SCEOP identifies the following emergencies based on frequency and potential severity: hurricanes, tornadoes, coastline flooding, nuclear (power plants), earthquakes, fires, hazardous materials, terrorism, transportation, civil disorder, dam failure, winter storms, and public health emergency (infectious diseases).[259]

The responsibilities for local, state and Federal governments are listed in this plan. They are identified as the following:

- Federal – Responsible for providing support to government buildings, Indian tribes and to states as needed.
- State – Responsible for public awareness, trains personnel, and supports the needs of the counties during emergencies.
- Local – At the county level, the responsibilities include creating an emergency management organization to protect life and property.

Activation levels are also identified in the SCEOP and called 'levels of readiness.' There are five levels of readiness for the SCEOC. Each level is an operating condition (OPCON).

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[259] South Carolina Emergency Operations Center, *South Carolina Emergency Operations Plan* (South Carolina: March 2008).

Activation Levels for the SCEOC

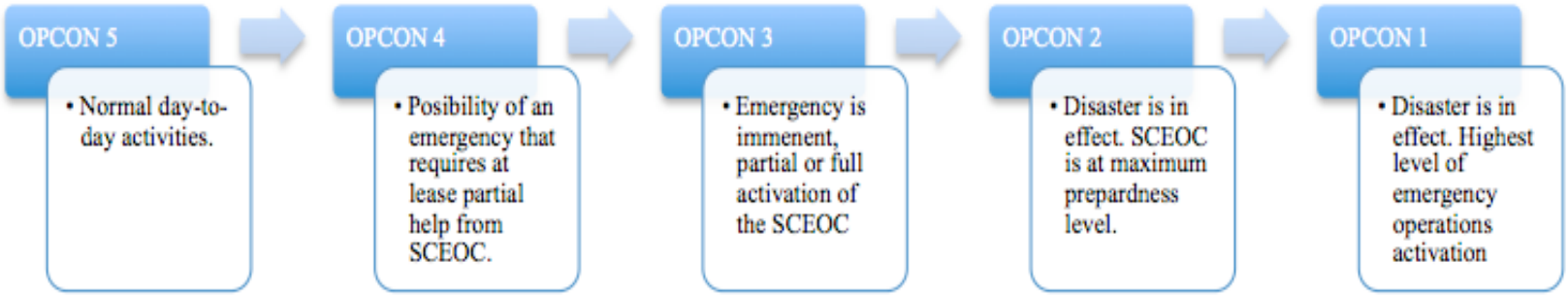

Figure 7: The activation levels of SCEOC and descriptions

4.2.8 Tennessee

As of February 10, 2009, the Tennessee Emergency Plan was not publicly available online. After a number of calls during the course of 6 months, the Tennessee Emergency Management office was unable to send a paper copy of the plan. Therefore, Tennessee could not be included in this analysis.

PART III: ANALYSIS AND CONCLUSIONS

Following the pervious chapters of framing the problem, researching the national plans, Region IV state plans, and collecting the relevant data, a comparative analysis is performed. This section will analyze the data collected and present relevant findings inclusive of tables and graphs. After analyzing the data, a comparative analysis is performed between the leading Federal documents on emergency management (the NRP, the NRF and the NIMS) and the state emergency management plans. Conclusions and recommendations follows this analysis to determine whether or not prioritizing to vulnerable populations produces a higher awareness in the state emergency plans for Region IV.

CHAPTER 5

ANALYSIS

The NRP, NRF and NIMS were used in the previous chapter to identify whether each state emergency plan adheres to the recommendations from the leading national guidelines. In this chapter content analysis will be used to compare the NRF with each state emergency plan. This comparison will determine the awareness of each state plan with regards to vulnerable populations. The NRF will provide the standard for inclusiveness of an emergency plan against which, each state plan will be analyzed. The NIMS will not be used as the standard for inclusion with regards vulnerable populations because it was never intended to be an emergency response plan. The NIMS was only meant to provide the core principles for a functional, viable plan, including the necessary responsibilities of local, state, and Federal governments and items to be included in the plan. Therefore, the NIMS is used to compare state plans in their overall preparedness. The NRP will also not be used as a standard because it is no longer current. It is included in this section only to display the relevant changes (before and after) concerns were raised. The NRP is important in the analysis because some state plans in this region are still based of the old national guideline.

5.1 Details of Analysis

The combination of the comparisons and the content analysis will help answer the following research question: Are current state emergency plans appropriately inclusive of vulnerable populations with regard to planning and response. Appropriateness is defined

in this analysis based on the standard for inclusion set forth by the NRF. This standard is determined by the content analysis, comparative analysis, and the status of the current state emergency plans. Vulnerable populations is defined as individuals living with a disability, individuals 65 years or older and the combination of the two. Other types of vulnerable populations were not taken into account in this research.

In the content analysis portion of this research, we are examining the frequency in which response to vulnerable populations are mentioned in these state emergency plans. The data sources are the 2006 Census data; state plans from the 8 states in Region IV, the NIMS and the NRF. The competing variables are (1) path dependency, each state adapts their response plan to the disaster to which they are most susceptible and (2) population vulnerability, each state has a different density of elderly and people with disabilities.

Threats to this research include; determining the differences amongst states, the ability to foresee and plan for emergencies that have never occurred before, lack of consistently reliable and accurate information on the disabled and/or elderly (percent of population, locations, etc), the decoding process of the content analysis (since portions were done manually), the possibility of not including all relevant sources for this data and that the data collected (frequency of phrases with the data) may not indicated that these phrases are acted on accordingly.

First the analysis will focus on vulnerable populations. Then the findings of the content analysis will be discussed.

5.2 Comparison of State Plans

Comparing the summaries of the state emergency operation plans with the NRP, the NRF, and the NIMS provides data on whether the Federal documents influence the relative awareness[260] of vulnerable populations within state emergency plans. This will help to determine whether the competing path dependency and bureaucracy variables have an effect on the state plans in this region. To identify the possible effects of path dependency, susceptible hazards for each state were compared; and to mitigate the possible effects of bureaucracy, the identified roles and responsibilities of each state plan were compared. These variables are reviewed in Table 3. Since Tennessee's plan was unavailable at the time of this study, its information is not included in this table.

Only one state in this region has updated its plan to follow that of the NRF, Mississippi. Alabama and Georgia were the only two plans to explicitly state that it was based off of the NRP. However, Kentucky, North Carolina, and South Carolina State plans are based solely on the NIMS. Florida does not mention the NRP, NRF or the NIMS in its state plan.

All plans examined in this table included a similar list of susceptible hazards of each state. Though, three states also included a hazard table identifying the frequency of each possible disaster and the risk of occurrence. Those states are Alabama, Florida and South Carolina.

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[260] Awareness is being used as a measure of inclusiveness in this analysis.

Table 3: Summary of the Region IV state emergency plans.

	AL	FL	GA	KY	MS	NC	SC	TN
Based on the NRP	√	—	√	—	—	—	—	—
Based on the NRF	—	—	—	—	√	—	—	—
Based on the NIMS	√	—	√	√	√	√	√	—
Date of preparation	4/06	2/04	01/08	8/08	06/08	03/08	03/08	—
Includes responsibilities	√	√	√	√	√	√	√	—
Includes Hazards	Table	Table	√	√	√	√	Table	—
Response/ Operational Actions	√ (9)	—	—	√	√	√	√	—
Letter of Agreement	√	√	—	—	—	—	—	—

The most current plan is the Kentucky Emergency Operations Plan, which was completed in August 2008. The Florida Comprehensive Emergency Operations Plan was completed in 2004 with revisions as recent as January 2009.

All of the plans include a list of responsibilities for the local, state and Federal governments. Only three of the states provide a table identifying the hazards and the likelihood they will occur. Comparing the presence of a letter of agreement was included in table 3 because it demonstrates an effort by the states to be more interoperable.[261] These letters represent prior agreements that the state emergency agencies have made

[261] Interoperability is defined as the ability of different agencies to communicate; across jurisdictions and with each other.

with other emergency planning organizations within the state. There were only two states, Florida and Alabama) to include a letter of agreement within their state plans.

Florida and Georgia were the only two states that did not include response or operational actions. According to the NRF there are three response actions for emergency management; prepare, respond and recover. Each of these includes a requirement to assure the effectiveness of the action.[262] The NIMS however, identifies five components of the (1) preparedness, (2) communications and organization management, (3) resource management, (4) command and management, and (5) ongoing management and maintenance. These components were created to work together rather than be used separately.[263] However, not all state plans that did include the response or operational actions had them the same as was included in the Federal documents nor did they mimic the same behavior. For example, the NRF listed three response actions (within the respond phase) that worked in a cyclical manner; however, the Alabama state plan included nine response actions that operated linearly.

To further discuss the hazards in the area, a table of the declared disasters per state was created. This table was formed from information presented by FEMA as the presidential declarations (the disasters upon which FEMA supported).

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[262] Federal Emergency Management Agency (FEMA), *National Response Framework*, 27.
[263] U.S. Department of Homeland Security (DHS), *National Incident Management System* (Washington: December 2008), 7.

Table 4: Types of declared disasters per state during 2000-2008.

	Evacuation	Fires	Flooding	Hurricanes	Ice	Mudslides/ landslides	Rockslides	Severe Storms	Tornado	Tropical Storms	Wind (severe)	Winter Storms
Alabama	1	2	4	7	0	0	0	7	5	1	0	1
Florida	1	22	3	9	0	0	0	3	3	7	0	1
Georgia	1	6	1	1	0	0	0	2	2	1	0	1
Kentucky	1	5	12	0	0	5	3	12	7	0	2	2
Mississippi	0	0	3	6	0	0	0	8	6	2	1	0
North Carolina	1	1	0	4	2	0	0	0	0	2	0	1
South Carolina	1	2	0	1	3	0	0	0	0	2	0	1
Tennessee	1	5	8	0	0	0	0	10	5	0	2	0

The declared disasters above are representative of the total disasters during the years 2000-2008 per state. In table 5 below, the total number of declared disasters per state during this time is tallied.

Table 5: Total number of declared disasters per state during 2000-2008.

States	Total # of disasters
Alabama	28
Florida	49
Georgia	15
Kentucky	50
Mississippi	26
North Carolina	11
South Carolina	10
Tennessee	31

From table 5 above, it is clear that Kentucky and Florida have had the most declared disasters out of all states in the region, 50 and 49 respectively. The next state with the most declared disasters is Tennessee with 31. Kentucky has the most of two types of natural disasters, flooding and severe storms. Florida has the second most natural disasters in the region (wild fires, hurricanes, and tropical storms).

5.3 Vulnerable Populations

The only vulnerable populations considered in this research were people living with disabilities and people over 65 years of age.[264] Before performing the content analysis, the disabled and aged demographic for each state was examined. The results of the content analysis may be skewed if states in this region have (or do not have) a significant percentage of aged or disabled residents. In order to determine this, a table detailing each state's percentage of aged and disabled residents is provided below.

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[264] Definition of Vulnerable Populations for this research is defined as individuals living on their own with a disability; individuals 65 years or older; and individuals with combination of the two

Table 6: Disabled and aged (elderly) residents in the Region IV states.[265]

	Disabled Population (raw)	Disabled Population (percentage)	Aged Population (raw)	Aged Population (Percentage)
Alabama	946,000	20.40%	625,000	13.50%
Georgia	1,457,000	15.30%	945,000	09.90%
Florida	3,274,000	17.90%	3,102,000	17.00%
Kentucky	874,000	20.60%	551,000	13.00%
Mississippi	607,000	20.80%	365,000	12.50%
North Carolina	1,540,000	16.90%	1,105,000	12.20%
South Carolina	811,000	18.40%	573,000	13.00%
Tennessee	1,150,000	18.70%	794,000	12.90%

This table can be translated into Figure 8. The percentage of disabled and residents over 65 exhibits the population with respect to each states total population. This table displays the percentages based on the total state population. Additionally the total number of disabled and residents over 65 per each state are tallied. Using the totals for the actual number (raw) population of 65 and disabled, Figure 8 was created.

[265] U.S. Bureau of Census: State and County Quick facts, 2007. Prepared by the U.S. Bureau of Census, (Washington, D.C.: 2009).

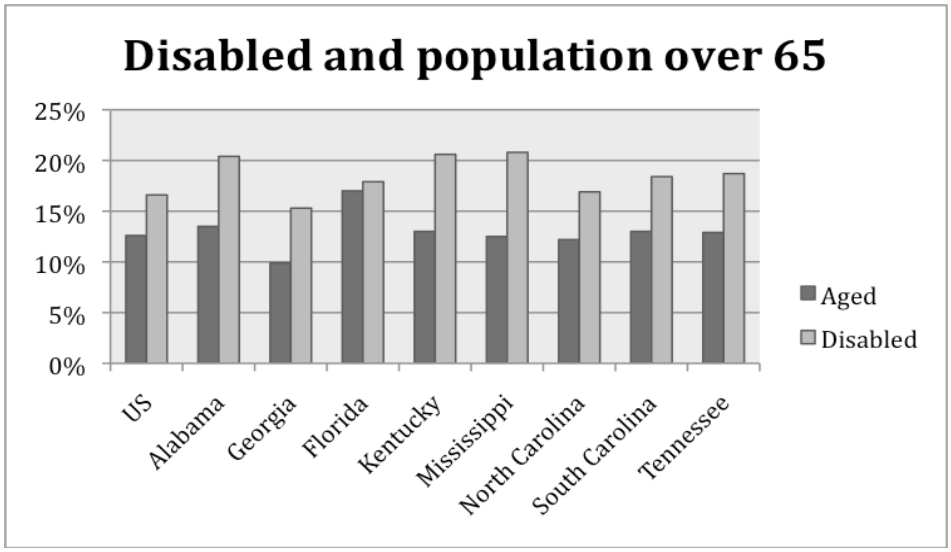

Figure 8: Percentage of disabled and aged (elderly) residents in the US and Region IV states.

The percent of aged and disabled citizens of the United States are 12.6% and 16.6%, respectively. In Figure 8 it is shown that most of the states in this region have a higher percentage of disabled residents than the national average. Additionally, 7 of the 8 states, except for Georgia, have a higher percentage of people over 65 residing in state. This might indicate that response to vulnerable populations should be of similar concern for all states in this region.

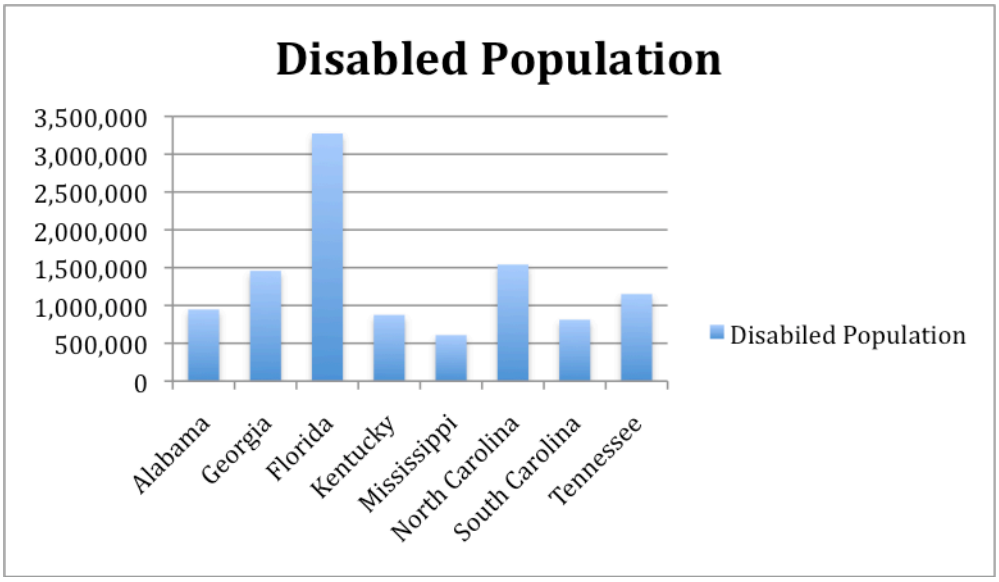

Figure 9: Bar graph identifying the disabled population per state.

From the populations found in Table 6, Figure 9 was created. This figure identifies Florida with more disabled citizens than any of other state in this region. Mississippi should be more aware to the needs of people with disabilities because a larger percentage of the state's population is disabled, as inferred from table 6 (later noted in table 9). From a regional perspective, Florida has more disabled citizens than anywhere else in this region. This statistic should also create a higher awareness for the response to people with disabilities.

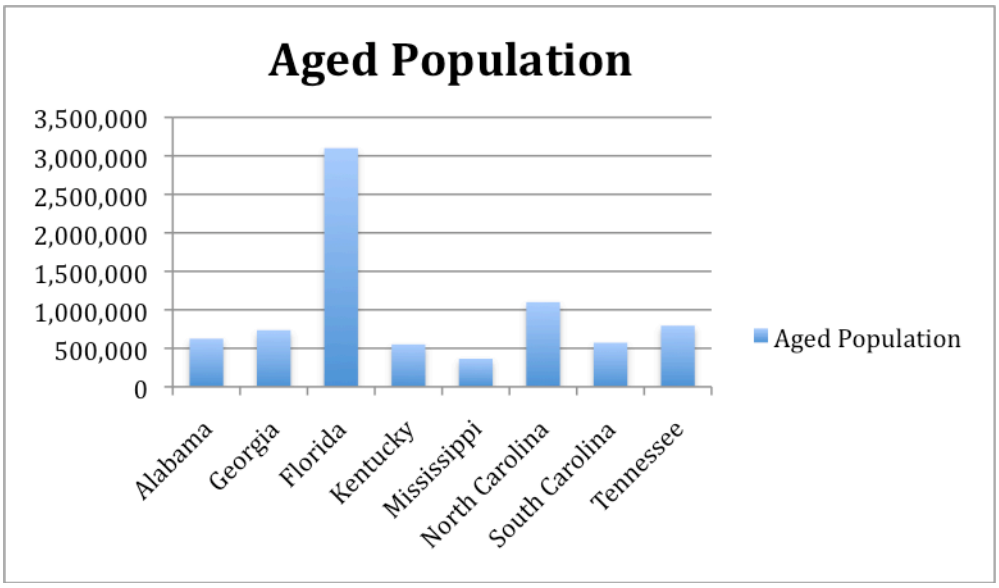

Figure 10: Bar graph identifying the population over 65 per state.

According to Figure 10, Florida has the most people over 65 in this region. Recall that Figure 8 indicated Florida also had the most people over 65 per state capita. This indicates that Florida might have a higher awareness to residents over 65 years old in this region.

Using these words as guides, the frequency that these topics appear in the NRF, NIMS and seven state response plans were tallied. The raw numbers were then divided by the total number of words found in each document. The total number of words in each document was counted using Word Counter 2.9, with the exception of Mississippi. Mississippi supplied a state emergency plan that was in picture format (jpeg, gif, etc). All other documents were provided as PDFs. This format rendered it impossible to use with Word Counter 2.9. Therefore, the total number of words in the Mississippi Comprehensive Emergency Management Plan (MCEMP) was counted manually. The support functions (ESFs) however, were counted using the Word Counter as they were

provided separate from the MCEMP and in PDF format. The frequency in which these words appear in all the documents used are shown as percentages in the table below:

Table 7: Frequency of words searched per NRF, NIMS and Region IV states.

	Vulnerable Pop
NRP	0.00%
NRF	0.03%
NIMS	0.00%
Alabama	0.01%
Georgia	0.01%
Florida	0.04%
Kentucky	0.00%
Mississippi	0.12%
North Carolina	0.01%
South Carolina	0.02%
Tennessee	N/A

It is important to note that the current state plan for Tennessee could not be found online and the Tennessee Emergency Management Agency was unable to send the requested documents prior to the completion of this paper.

The percentages were then used to show the awareness of each states plan with regards to response to vulnerable populations, based on the NRF as a standard. The NRP had less 0.01% frequency of including vulnerable populations in the document. Alabama and Georgia were the two state plans that used the NRP as a standard. Both state emergency plans included vulnerable populations more than the NRP.

In Figure 11, the comparison of the NRF, NIMS and the Region IV state plans with regard to vulnerable populations, is displayed. It is determined that when using the

NRF as a standard, Florida has a higher awareness to vulnerable populations than any other state in this region.

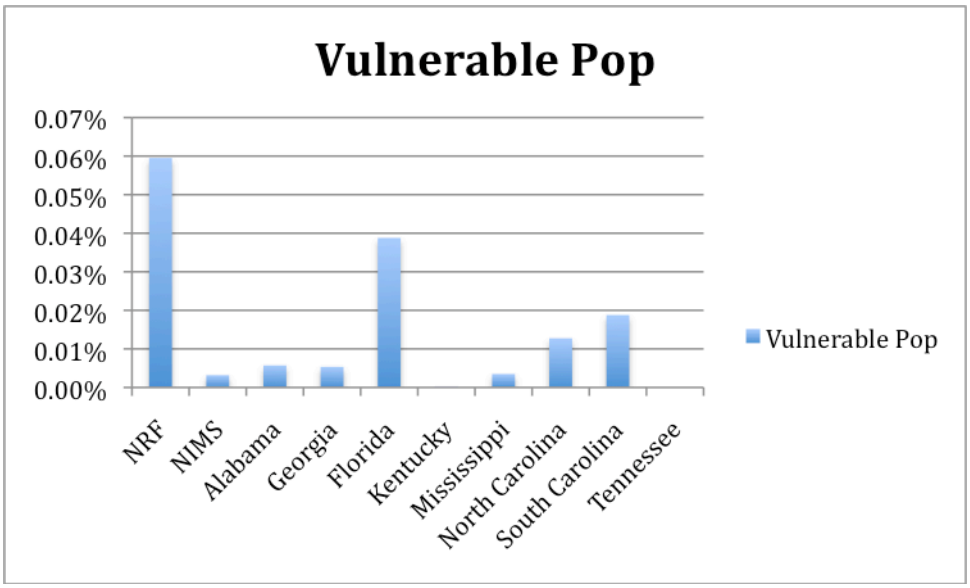

Figure 11: Frequency that Vulnerable Populations appears in NRF, NIMS and Region IV state plans.

Kentucky, however, has the least sensitivity to vulnerable populations. The NIMS was included to show its difference to the NRF. The NIMS only handles the core values that should be included in all plans (such as management organization, collaboration with other agencies, and appropriate activation levels for the emergency office), the NRF however, is the framework upon which the state plans should be modeled (this is more specific on how to handle types of emergencies, appropriate response and measures for emergency planning and preparedness).

These findings may have been a result of the demographics within the state. Earlier in this chapter, key statistics and data was examined to present alternative reasons for the inclusiveness each state had for vulnerable populations. Finding this data was not enough to state with certainty that a state with a high population of disabled residents will

be necessarily more aware to the overall needs of vulnerable populations (during emergencies). Because of the small number of observations in this study, there were only seven states investigated, many of the usual statistical analysis would not be accurate or acceptable to use for further investigation. Therefore the Pearson's correlation coefficient was obtained for each of the statistics examined earlier in this chapter and presented in Table 8.

The Pearson's correlation coefficient is a tool to measure the degree of association between to variables. The coefficient varies between the range of -1 and +1. "A coefficient of +1 indicates a perfect positive association, while -1 indicates a perfect negative association." [266] A strong association will be defined in this paper as coefficient higher than |.70| and a weak association defined as lower than |.45|.

Table 8: Pearson's Correlation Coefficient.

	Pearson's Correlation Coefficient
Inclusiveness of Vulnerable Populations and percentage of Disabled residents	-0.32
Inclusiveness of Vulnerable Populations and percentage of Residents over age 65	+0.76

There were two statistically significant associations from the data examined. From the Pearson's correlation coefficient, inclusiveness of vulnerable populations in the state plans of this region is more closely associated with the number of residents over the age

[266] Matthew David and Carole Sutton. *Social Research.* (California: Sage Publications, 2004), 301.

of 65 living within the state. The number of disabled residents is shown to have very little affect on the inclusiveness of vulnerable population in the state emergency plans. In fact the coefficient suggests that there is a very weak negative correlation between the amount of disabled residents in the state and the relative inclusiveness of vulnerable populations in state plans.

CHAPTER 6

CONCLUSIONS

The Federal government involvement in emergency management has evolved in magnitude since the 1800s, usually following a catastrophic event. In 2001 and 2005, the U.S. has had two large-scale emergencies (man-made and natural) that have shaped new policy regarding emergency management. These disasters have revealed numerous failures on part of planning for, preparedness for, and response to disasters. Of the identified failures, accessible emergency communications for all and response to vulnerable populations were studied in this thesis. With over 37 million people over 65 years of age and 38.22 million people with disabilities (over the age of 5), it is important that these populations be appropriately included in emergency management plans.

This thesis has compared the NRP, the NRF and the NIMS to state emergency plans in FEMA Region IV states. Using content analysis, the frequency that words pertaining to vulnerable populations appear in the state emergency plans was compared to the corresponding frequencies in the NRF. Additionally, the state emergency plans were compared to both the NRF and the NIMS for overall content. This comparison was to determine if there were fundamental differences between the states plans and the national guidelines.

DHS and FEMA received marginal grades on preparedness and emergency communications (according to the 2007 Annual Report Card), criticisms about poor communications (during both the September 11, 2001 terrorist attacks and Hurricane Katrina in 2005) and criticisms about poor response to vulnerable populations (during

Hurricane Katrina in 2005). Despite this, FEMA's attempt to adjust plans and implement new guidelines on management response has been largely overlooked in state emergency plans. This thesis claims that the inclusiveness of state emergency plans in regards to vulnerable populations does not match that of the NRF. Since its introduction in March 2008, most states still base their plan off of the predecessor of the NRF (the NRP) or solely on the NIMS. The state plans do however, match the inclusiveness of the NIMS or exceeds it. This means that while the NRF was established to guide states on how to manage emergencies, it is actually the NIMS template that most state plans are being modeled after.

From the data collected, prioritizing emergency communications and response to vulnerable populations does not produce more aware state emergency plans for Region IV. It was found through this content analysis that Florida, presents a state emergency management plan that is best at responding to vulnerable populations within this region. Of note, President Obama, in March 2009 announced his intent to nominate the Florida state emergency director, Craig Fugate, to head FEMA.[267]

In Table 9 below, the demographics and statistics of each state are summarized. Within this region, Florida has had the most experience with disasters. Florida was hit during Hurricane Katrina but has had to deal with a number of hurricanes before and since. This may also be a contributing factor for the increased sensitivity, thereby making it a more effective plan.

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[267] Coale, Phil, "Official: Florida's Fugate is Obama's choice for FEMA." USA Today. March 4, 2009.

There was one state plan that exceeded the NRF in effectiveness; this was the Florida Comprehensive Emergency Management Plan (FCEMP). This is despite the fact that the FCEMP does not mention or reference the NRF, NIMS nor the NRP. Florida has the largest population of aged and disabled residents in the region and a larger percentage than the national average. This may increase Florida's sensitivity to responding to vulnerable populations.

This research also suggests there are issues with the guiding documents for state emergency plans. The NRF is hardly used. The NIMS, however, is used consistently even though it was not created to be a response plan. Ideally the NRF and NIMS are meant to be used together, but it seems as though the NIMS is more widely used that the NRF or the older NRP. Perhaps the NIMS is easier for the states to follow because of its consistency, while the NRF has been changed and adjusted more frequently. In addition, the findings of this report show that the state plans are more influenced by state statistics and demographics than by the national guiding documents. An additional factor indicates that most states in this region identified susceptibility to the same hazards, thus the plans do not differ based on the planning for or response to potential threats.

Table 9: Statistics and demographics for each state in FEMA Region IV.[268]

	AL	FL	GA	KY	MS	NC	SC	TN
Total Population	4.6 M	18 M	8.5 M	4.2 M	2.9 M	8.8 M	4.3 M	6 M
% 65 and over	13.5%	17.0%	9.90%	13.0%	12.5%	12.2%	13.0%	12.9%
# of People with Disabilities	946,000	3.3 M	1.54 M	874,000	607,000	1.5 M	811,000	1.15 M

[268] U.S. Bureau of Census: State and County Quick facts, 2007. Prepared by the U.S. Bureau of Census, (Washington, D.C.: 2009); U.S. Bureau of Census: 2006. Prepared by the Population Division of the U.S. Bureau of Census, (Washington, D.C.: 2009).

The findings of this thesis can lead to a number of future research endeavors related to how states integrate emergency communications and vulnerable populations into their emergency management plans. All vulnerable populations were not taken into account in this research, widening the scope could lead to more interesting results. Surveys and interviews could be performed to gather insight from emergency management personnel. A statistically analysis of state plans in comparison to national guidelines could be presented for all 50 states. County-specific studies could be done to determine all the intricacies of state emergency planning from the local government level. An analysis of cross-jurisdictional cooperation could be beneficial to identify possible hindrances to seamless interoperability. Additionally, an investigation on why the NRF has not been modeled by the 50 states and outlining the necessary policy recommendations to ensure the framework is incorporated in future state plans could be performed. Another study could be performed to compare state plans, before and after the implementation of the NRF.

These studies and analyses would prove beneficial to implementing policy to effectively include the needs of the disabled and elderly into emergency plans at all levels of government. Similar analyses could be performed to ensure efficient communications in responding to and providing information for special needs populations. This would be beneficial in both emergency and non-emergency situations.

APPENDIX A

ALABAMA HAZARD TABLE

HAZARD RANKING		RISK			IMPACT		
		HIGH	MED	LOW	HIGH	MED	LOW
	NATURAL HAZARDS						
1	Flooding	H			H		
2	Tornados/Wind Storms	H			H		
3	Hurricanes	H			H		
4	Winter/Ice Storms	H				M	
5	Lightning	H					L
6	Drought		M				L
7	Hail		M				L
8	Extreme Temperatures		M				L
9	Wildfire			L			L
10	Urban Fire			L			L
11	Earthquakes			L			L
12	Landslides/Subsidence			L			L
	TECHNOLOGICAL HAZARDS						
1	Energy Crisis		M			M	
2	Transportation (Air/Sea/Rail)		M			M	
3	Terrorism			L	H		
4	Chemical Stockpile (CSEPP)			L	H		
5	Radiological (Attack)			L	H		
5	Radiological (Fixed Facility)			L		M	
6	Dam Failure			L		M	
7	Hazmat (Fixed Facility)			L		M	
8	Cyber-Terrorism			L		M	
9	Hazmat (Transportation)			L			L
10	Civil Disturbance			L			L
11	Radiological (Transportation)			L			L

APPENDIX B

FLORIDA HAZARD TABLE

HAZARD and RISK ASSESSMENT MATRIX – (Summary)					
HAZARD CATEGORY	**FREQUENCY OF OCCURRENCE**	**VULNERABILITY IMPACTS**			
		Population	***Property***	***Environment***	***Government Operations***
1. *Tropical Cyclones (Hurricane) (Tropical Storm)*	**(2)** – Sixty (60) land falling Hurricanes from 1900 through 2002. Between 1992 and 2001, the State of Florida has received 14 Presidential Declarations for tropical cyclones; totaling over $1.8 billion in federal funds.	**C**	**C**	**C**	**H**
2. *Severe Weather (Tornado) (El Nino)*	(1) - Severe Weather impacts Florida everyday during the summer. Also, extensive severe weather events occur about 5 times annually, mostly in the Spring and Fall. In 1998, three events (El Nino, Groundhog Day Storm, and the Pinellas Tornadoes were declared Presidential disaster, totaling over $115 million in federal funds. 42 people were killed and more than 200 injured during the tornado event.	***M***	***M***	***H***	***L***
3. *Environmental (Drought) (Heat/Cold Waves) (Flooding) (Wildfire)*	**(1)** - Wildfires occur annually in Florida. In 2001, the Mallory Swamp fire burned almost 500,000 acres of woodland. In 1998, Flagler County was totally evacuated due to wildfires; that year over 1 million acres burned along with 100 structures of various sizes. Presidential declarations were issued in 1998, 1999, 1999, 2000, and 2001 for wildfires, totaling over $ 55 million. **(2)** - Flooding occurs every year in Florida. In 1998, the worst flooding in Florida's history occurred in the Panhandle area; two years later flooding paralyzed 8 Miami-Dade communities for almost 10 days. Three flooding events were declared federal disasters totaling $789 million since 1992.	***M***	***M***	***H***	***L***

APPENDIX B (CONTINUED)

FLORIDA HAZARD TABLE

HAZARD and RISK ASSESSMENT MATRIX – (Summary)					
HAZARD CATEGORY	**FREQUENCY OF OCCURRENCE**	**VULNERABILITY IMPACTS**			
		Population	*Property*	*Environment*	*Government Operations*
5. *Terrorism*	**(4)** - On September 11, 2001, terrorist attacked the United States. Florida has many targets of opportunity for terrorists - political, industrial, historical, and military. South Florida experienced an Anthrax outbreak in 2001.	***H***	***H***	***H***	***L***
6. *Technological*	**(2)** - Over 1000 hazardous materials events were reported to the State Warning Point. Approximately eleven percent required an evacuation from the area of impact.	***M***	***M***	***M***	***L***
7. *Mass Migration*	**(3)** – In 1994, Florida responded to two major mass migration incidents involving approximately 100 Haitian and 700 Cuban refugees. While enforcement of immigration laws is a federal responsibility, it is anticipated that joint jurisdictional support of any operation will involve the State and the impacted local government.	***L***	***L***	***L***	***L***

FREQUENCY OF OCCURRENCE	*NUMERICAL VALUE*	*VULNERABILITY FACTORS*	*NUMERICAL VALUE*
Annual Event	(1)	*Low*	*L*
Every 5 Years or Less	(2)	*Moderate*	*M*
Every 10 Years or less	(3)	*HIGH*	*H*
Every 30 Years or less	(4)	*Extensive*	*E*
Greater than 30 Years	(5)	*Catastrophic*	*C*

APPENDIX C

SOUTH CAROLINA HAZARD

TABLE

SEVERITY	Unlikely	Possible	Likely	Highly Likely
Catastrophic	Nuclear Power	Earthquake Terrorism Dam Failure	Hurricane/ Tropical Storm Transportation (Major Accident)	Hazardous Materials (Transportation)
Critical				Tornado Flood Structural Fires
Limited		Civil Disorder		Winter Storm Wildfire
Negligible			Drought	Hazardous Materials (Fixed Facility)

FREQUENCY

Frequency

Highly Likely: Near 100% probability in the following year.
Likely: Between 10 and 100% probability in the next year or 1 chance in the next 10 years.
Possible: Between 1 and 10% probability in the next year or at least 1 chance in the next 100 years.
Unlikely: Less than 1% probability in the next 100 years.

Severity
(Based on effects in any county or smaller jurisdiction)

Catastrophic: Multiple deaths, complete shutdown of critical facilities for over 30 days, more than 50% property damage.
Critical: Permanent disabilities, shutdown of critical facilities for two weeks, more than 25% property damage.
Limited: No permanent disabilities, shutdown of critical facilities for one week, more than 10% property damage.
Negligible: Injuries treatable with first aid, minor quality of life lost, shutdown of critical facilities for 24 hours or less, less than 10% property damage.

APPENDIX D

CODER INSTRUCTIONS

You have been given several documents to code. For each:

(1) Count the number of times the topic of "Emergency Communication" appears based on the coder 'cheat sheet' and your own understanding of the phrase.

Example: For emergency communications, reliability goes hand-in-hand with accessibility.

(2) Separately for each document, count the number of times the topic of "Vulnerable Populations" appear based on the coder 'cheat sheet', **Note:** for purposes of this study only people with disabilities (any disability) and people over the age of 65 are being considered as vulnerable population.

Example: An estimated 49.7 million men, women and children have a disability that impacts their everyday activities (Census 2003).

(3) Additionally, separately, count the number of times the two topics "Emergency Communication" and "Vulnerable Populations" appear together.

Example: In an effort to decrease barriers for people with disabilities we have initiated forums on several disability related issues including emergency communications and homeland security.

Please record your numeric findings in the table below.

Documents	Emergency Communications	Vulnerable Populations	Emergency Communications and Vulnerable Populations
	Total # of times topic appears		
NRF			
NIMS			
Alabama			
Florida			
Georgia			
Kentucky			
Mississippi			
South Carolina			
North Carolina			
Tennessee			

APPENDIX E

CODER REFERENCE SHEET

For purposes of this study, it is important to capture each instance in which "emergency communications" and "vulnerable populations" appear. This can be difficult because ideally the specific words 'vulnerable', 'emergency', 'communication' does not have to be used in order to convey the same topic.
In the table below, there are some words listed/phrases listed that convey similar meaning to the topics being studied. These words should be counted for the respective topics. This is just a guide, however, using your own understanding you may find other words that relate to either topic.

Emergency Communications	Vulnerable Populations
Wireless Communication Mobile Communication Communications during disasters Communications during pandemics Communications during terrorism Emergency Alert Systems	Special Needs Disabilities, Disabled Elderly Older Population Over 65 Vulnerable Population Blind Deaf Handicapped

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